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Bay Area's Computer Magazine

JULY 7, 1989 • #58

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UNIX TURNS 20:

Interview With UNIX Co-Author Dennis Ritchie

Bench–marking The NeXT

A Kinder, Gentler UNIX?

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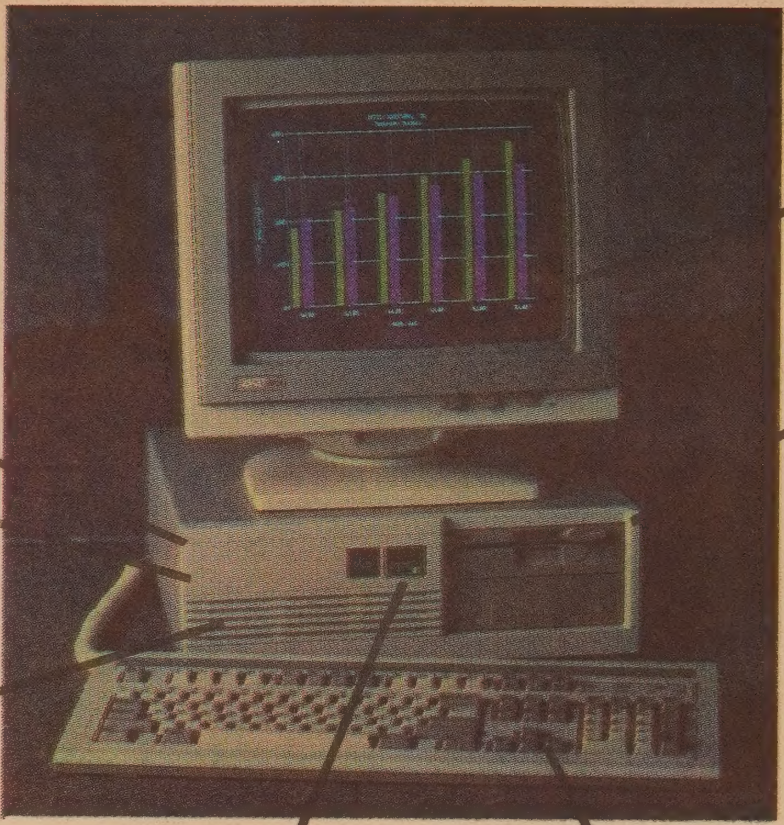

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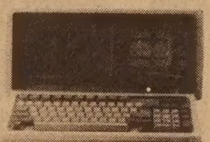

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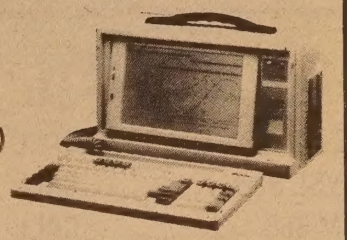

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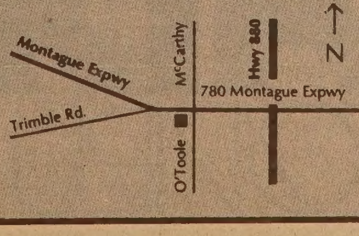

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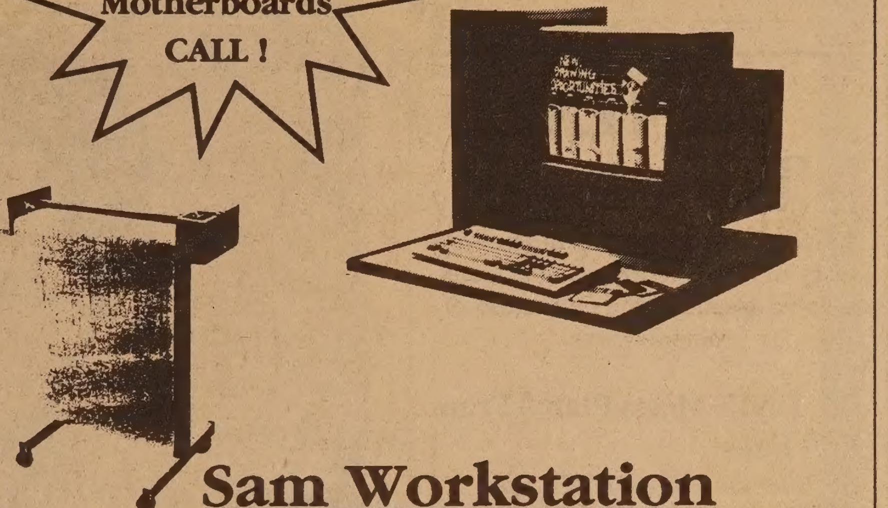

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MICROTIMES™

UNIX Turns 20

Celebrating the twentieth anniversary of AT&T's operating system, we've assembled a collection of perspectives.

68 UNIX Meets Plan 9 From Bell Labs
An Interview With UNIX Co-Author Dennis Ritchie
By Bennett Falk and Mary Eisenhart
A member of the team that developed UNIX and the author of the C programming language, Ritchie discusses those historic developments and talks about the new distributed processing operating system he's currently working on.

72 A Kinder, Gentler UNIX?
By Ken Greenberg
Why UNIX is positioned to take advantage of today's business environments and hardware capabilities.

142 The Black Box
By Bennett Falk
This month's UNIX column offers benchmarks on the NeXT machine, which performs admirably.

FEATURES

76 Regis McKenna: The Future's Bright
By Mary Eisenhart
Continuing from last month's interview, McKenna explains changing and evolving high tech markets, and offers some insights on how to take advantage of them.

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Protocols, standards, and a preview of Novell's *NetWare 386*.

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COVER AND CONTENTS PHOTOS: PAT JOHNSON

Farallon president Reese Jones talks about the office of the future.

COVER STORY

48 Farallon: Building The Ultimate Network
By Steve Guttman
Founded a few years ago as a BMUG spinoff, this Berkeley-based company incorporates text, graphics, and sound into its networks, and is now consolidating its strategic position for the collaborative work environments of the future.

Mac @ Work

108 PC To Mac And Back: Designer Graphics
By Lenny Bailes
Continuing our series on converting graphics files, one of the more problematic elements of Mac-PC connectivity, Lenny Bailes discusses helpful utility programs and the surprising conversion capabilities of *Ventura* and *PageMaker*.

118 Mac-PC Connectivity *By Robert Beauchamp*
Microsoft *Word* 4/5 on Mac and PC.

124 QuarkStyle *By Tony Rocco*
A great package for desktop publishing on a budget.

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System 7.0, the nuPrometheus League, and other excitement.

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By Jim Warren
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By John C. Dvorak
Wandering the online data world.

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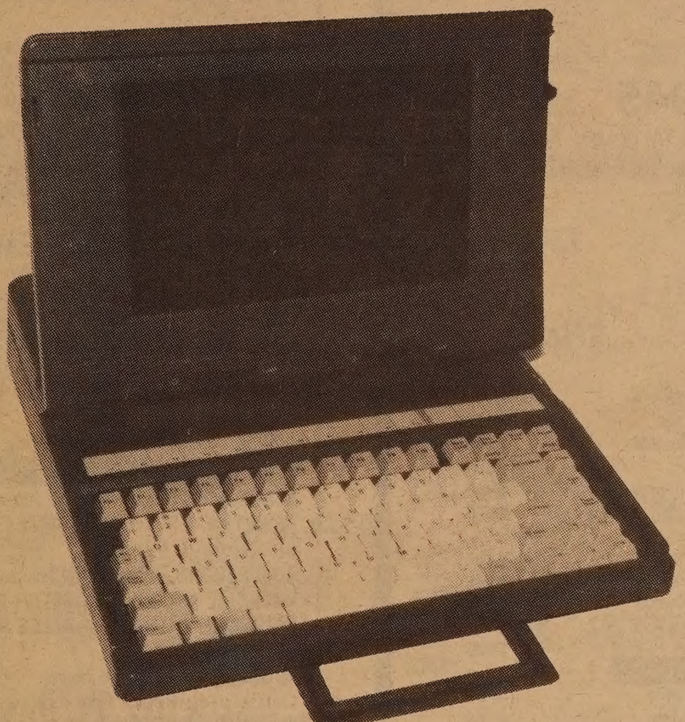
By Max Millard
If you type the same words and phrases frequently, here's a way to improve your productivity by reducing your keystrokes.

90 So You Bought A LaserJet. Now What?
By Birrell Walsh
Add-ons and accessories to make your life easier.

92 The Altima One Laptop
By Ed Kahn
Currently available at a low introductory price, this machine offers great performance and laptop-to-desktop flexibility.

Announcing The Next Generation Of Battery Powered 286 Laptop Systems

Mitsuba's *Ninja-12*



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PC MAGAZINE EDITOR'S CHOICE

As seen in
PC Magazine's
Review,
July 1989.

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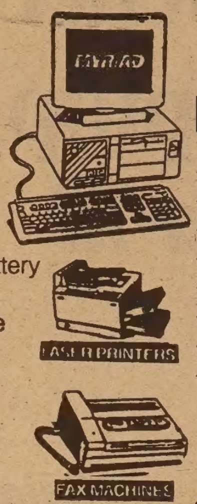

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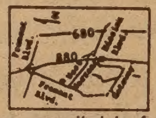

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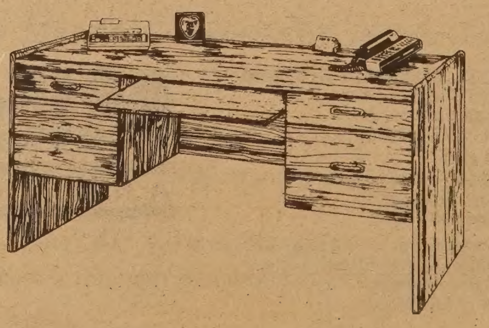

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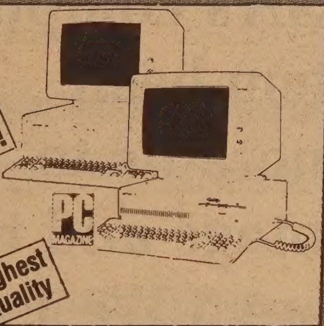

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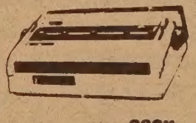

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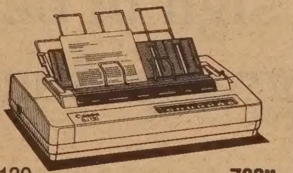

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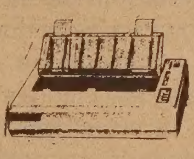

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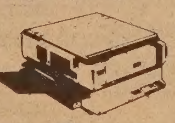

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LETTERS

Freedom Of Speech?

The analogy that Brock N. Meeks draws between free speech issues in shopping malls and computer conferencing services ["Free Speech Is Where You Find It," Issue #56, May 1989] is correct. The conclusion he draws, that court decisions upholding the right of property owners to limit individual expression on their property are an encroachment on freedom of speech, is absurd. Our founding fathers very wisely prevented the government from interfering with the people's expression. The government may not restrict freedom of speech on public or one's own private property.

Property owners' rights are also protected by the Constitution and have their roots in English Common Law. A property owner may allow public access to his property for certain purposes (e.g., to shop or communicate electronically on certain topics). By doing so, the property owner does not abrogate his right to control which activities occur on his property. Otherwise shopping malls would be open to any type of public demonstration, not just petition signature-gathering—and BBSes could be taken over by individuals wishing to propagate revisionist history.

The difference between revisionist history and revisionist law (which Mr. Meeks advocates) is that events have occurred and cannot be altered. The Law, in this country, is ultimately what the Supreme Court says it is.

Finally, in regard to countries like Afghanistan, which have stripped their citizens of human rights, I would like to point out that among the rights totalitarian governments trample are property rights (they are usually among the first to go). If Mr. Meeks would like to see a computer conferencing system where unlimited expression was allowed (which I think is a great idea), he should start his own BBS.

Jack Fox
Walnut Creek

Viruses—A Communist Plot?

I greatly enjoyed your February 20 issue dealing with computer viruses. It took a sober and informative look at the history of these beasts and speculated on their future. But Bill Copenhaven's letter in your May 15 issue, railing against computer viruses as some kind of communist-inspired terrorist plot, provoked howls of laughter in our office. His knee-jerk response to the problem of virus infection obscures the issue and blows the problem well out of proportion. Computer viruses could indeed be formidable weapons, but—let's be serious—nowhere near as destructive as the poison gas or nuclear warheads to which Mr. Copenhaven compares them.

Copenhaven completely ignores the beneficial effects of viruses. One immediate positive result of viruses is better computer security (not to mention handsome profits to the companies that sell backup devices and virus-protection software). What else would have prompted ARPANET to plug its security holes if not the celebrated virus? How long had NASA's computer system been vulnerable to sabotage and theft before a West German computer club demonstrated the problems inherent in its security system? Face it: lax sector is a sign of bad programming. Furthermore, anyone too lazy to make backups of their data is just asking for trouble; hard disks crash all the time without the aid of viruses.

How long had NASA's computer system been vulnerable to sabotage and theft before a West German computer club demonstrated the problems inherent in its security system? Face it: lax sector is a sign of bad programming.

I even have a theory that there are viruses floating around out there in many commercial software packages just waiting to be activated. Say a software publisher is worried about piracy of his/her product. The publisher could tell a programmer to write a malevolent subroutine into the product that would install itself in the hard drive of a pirate's computer once the diskette had been copied more than a reasonable number of times, "reasonable" being the generation of perhaps four or five backups.

And honestly, much of the data in our information-glutted world is, in the long run, fairly useless. Sure, there is "important" data in mainframes and minis in commercial use (usually billing and payroll records) as well as in government databanks. Does Mr. Copenhaven know how much information the government (i.e., the DMV, IRS, FBI, CIA, and NSA) keeps in a file under his social security number? But micros are another matter. If the micros in my office were to get an infection, most of the data that would be lost would consist of nothing more important than administrative memos, minutes of meetings, reports, budget projections, and personnel records, all of which exist in hardcopy files. And since we make weekly backups, all of this garbage is easily recoverable.

Computer viruses are a logical, and not entirely unexpected, consequence of the phenomenal growth of the industry. I read John Brunner's *Shockwave Rider* when I was in junior high school in the early '70s before I knew what a byte was and well before the personal computer industry was even on the runway, much less off the ground. We have seen this coming and have had plenty of time to prepare for it.

Mr. Copenhaven asserts that "The acceptance of viruses as a necessary stage in the evolution of computers is...another sure step in the path toward a new dark age." On the contrary, I feel that thrusting one's head in the sand to await the end of civilization as we know it is a pretty ineffective way of preventing such a disaster. Understanding viruses and how they operate is the key to overcoming them and learning to modify their behavior to benefit the computer user. Civilization has found ways to turn yeast into beer and bread; medicine has found ways to turn bacteria, bread molds, and biological viruses into antibiotics and vaccines. Surely the computer industry can find ways to turn tapeworms into useful programs.

Let Mr. Copenhaven string garlic around his neck and carry a gold cross to ward off vampire viruses. I'd rather make friends with one and try to housebreak it for my own purposes.

Terry L. Floyd
San Leandro

Shareware: Still A Few Bugs In The System

Reading what Bob Wallace of Quicksoft [Issue #56, May 1989] had to say about shareware and keeping the customers satisfied reminded me of a few letters directed to shareware individuals that I still have not yet received replies from. In these particular letters, I specifically requested answers to some questions regarding their shareware programs.

With one program, I mailed a blank disk and return postage, as directed on the shareware disk, for additional programming that was not on the disk. No money was required for this request. Two months later, I have not received anything back disk or letter.

On another shareware program, I do not have a use for it at this time, but I needed some additional information that would enable me to make use of it at a later date. I sent a letter asking some questions about the program. One month has passed—still no reply.

To sum it up: on every shareware disk I have acquired, when I sent a letter to the author with a question or two, none of them has has the courtesy to reply. Since my letters were not returned to me, they must have reached their destination.

Some of the shareware disks I have are dated as far back as 1984. Perhaps these authors are no longer in the business, and therefore ignore any correspondence received.

So why send money to a source that does not reply to an inquiry? True, some of them may have died, but can my luck be so bad that I picked all the

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• 1MB MEMORY Expandable to 8MB • 1.2MB FLOPPY • HD/FD CONTROLLER • 220W POWER SUPPLY • 101-KEY ENHANCED KEYBOARD
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EGA Monitor	$330
14″ Amber w/base (by SONY)	115
Samsung amber 12″ w/base	79
RGB Monitor (14″)	235
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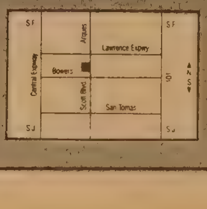

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10am-2pm Sat

VISA

LETTERS continued

dead ones to write to? I doubt it.

Cyrus Gordo
Oaklan

By way of a sorry update on the saga of *ICONVER*
by John Michalski of Infinity Engineering [*M*
Schweid read about this program in an article abou
converting Mac and PC graphics, downloaded
from a BBS, and sent in a $50 registration fee fo
enhanced software and documentation. He re
ceived no reply to this or to repeated subsequen
inquiries.—eds.], I wanted to let you know ho
things were not progressing.

As you remember, your staff located a phon
number for me for Mr. Michalski. As I mentioned t
you, I called him on April 17, 1989, explaining th
entire disaster. He said he had not seen any of m
letters, did not know of my problem, requests,
demands. He asked if I wanted another diskette or
refund. I told him that based on this experience
would rather have a refund. He said he would sen
me a check.

Since I have received nothing as of today [June 4
I called Michalski collect this morning. The phon
number has been disconnected.

I am sending a package regarding my problem
with this author to the Shareware Ombudsman a
well. Although my $50 may be lost, I would appre
ciate anything your journal can do to get the wor
out.

Gary Schwei
Millbra

Despite the diligent efforts of shareware author
most of whom are highly conscientious and respon
sible, stories like this continue to surface.

While there is no panacea, there are a couple
things prospective customers can do to protec
themselves. If the program carries the message th
it's produced by a member of the Association
Shareware Professionals, you have reasonable as
surance that the author adheres to that organiza
tion's high standards of responsiveness. If the sof
ware carries no such notice, you might be wise t
check with the ASP Ombudsman, PO Box 578
Bellevue, WA 98006, CompuServe 70007,3536, t
see if complaints have been lodged against th
vendor before you send in your money.—eds.

User Group Consumer Alert

I would like to contact others who sent membershi
fees to join the following user groups:

San Francisco Ventura Publisher Users Group-
$20/year

San Francisco PageMaker Users Group—$2
year

Hewlett-Packard DeskJet Printer Users Group-
$16/year

San Francisco Desktop Publishers Users Group-
$20/year

San Francisco First Publisher Users Group—$2
year

All were advertised in *MicroTimes* in January an
February of 1989 by Vincent Poy, 895 Pacific Av
nue, Suite 638, San Francisco, CA 94133-4340.

Kathleen Ha
PO Box 68
Kentfield, CA 9490

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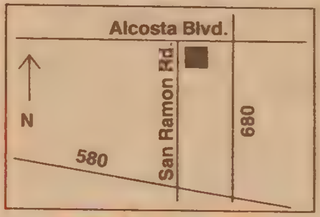

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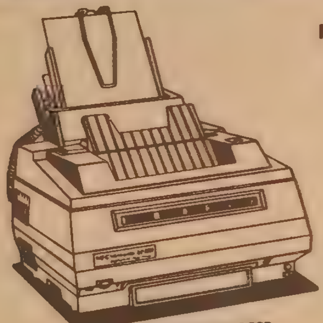
Dublin, CA 94568



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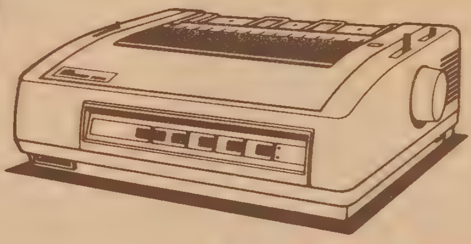
The Pinwriter P5200 and P5300 also give you 7 resident type styles plus more on optional font cards. And you can turn these models into color printers with an inexpensive user-installed option. NEC printers also have the industry's highest reliability ratings.

So keep your company in the black with a new Pinwriter P5200 or P5300 printer.

C&C



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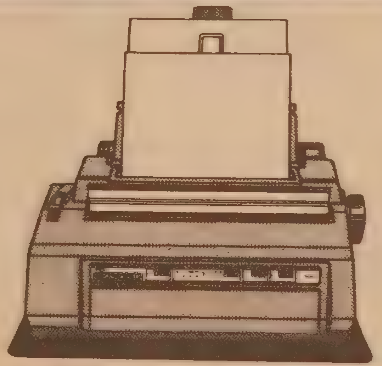

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WHEN YOU WANT THEM TO.

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- Landmark = 37.9 SI = 31.6
- 1 MB Expandable To 12 MB; Memory Support Up To 16 MB Total With Optional Memory Board
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- Socket For 80387 & Weitek Math Co-Processor
- 2x32 Bit, 5x16 Bit, 1x8 Bit Slots
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- 66 MB 23ms Hard Drive
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- 101 Key MaxiSwitch Keyboard
- Technical Version 4.0 & I/O Cache Utility
- Supports MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR-DOS, Concurrent DOS 386

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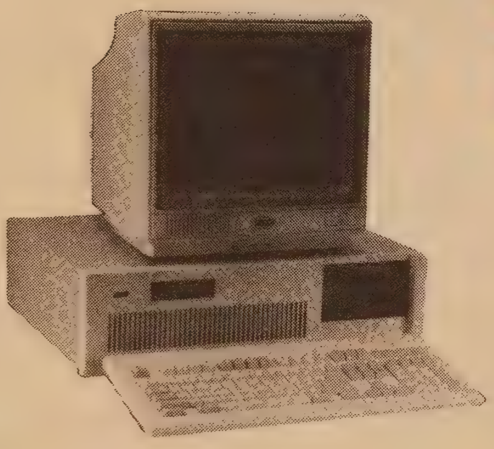

20 MHz 386 SYSTEM W/66 MB HARD DISK

- Landmark Speed = 25 SI = 23
- 1 MB Expandable to 8 MB On-Board
- 1.2 MB Floppy Drive
- 1:1 Interleave
- 66 MB 23 ms Hard Disk
- 2 Serial, 1 Parallel, 1 Game Port
- 101 Keytronics Keyboard
- 230W Power Supply & Quality Case
- Real Time Clock/CMOS Memory w/Battery Back-Up
- Socket For 80387
- Supports MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR-DOS, Concurrent DOS 386

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40 MB Hard Disk 38 ms ST-251	.310
40 MB Hard Disk 28 ms ST-251-1	.339
44 MB Hard Disk 23 ms.	.425
72 MB Hard Disk 25 ms.	.535
80 MB Hard Disk 28 ms.	.565

HIS BUT IT IS TRUE!!!!

25 MHz 386 SYSTEM With 66 MB HARD DISK

- Landmark = 34.5 SI = 29.5 (WITH MEMORY INTERLEAVE)
- 1 MB Expandable To 8 MB On-Board
- Socket For 80387
- 1x32 Bit, 5x16 Bit, 2x8 Bit Slot
- Real Time Clock/CMOS Memory w/Battery Back-Up
- 1.2 MB Floppy Drive
- 66 MB 23ms Hard Drive
- 1:1 Interleave Hard/Floppy Disk Controller
- 2 Serial, 1 Parallel, 1 Game Port
- 230W Power Supply & Quality Case Holds 5 Drives
- 101 Key Keytronic Keyboard
- Supports MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR-DOS, Concurrent DOS 386

$1995

NTY 1 YEAR PARTS & LABOR WARRANTY

16 MHz 386sx SYSTEM w/66 MB HARD DISK

- Landmark Speed = 21 SI = 19
- 1 MB Expandable to 8 MB On-Board
- 1.2 MB Floppy Drive
- 1:1 Interleave
- 66 MB 23 ms Hard Drive
- 2 Serial, 1 Parallel, 1 Game Port
- 101 Keytronics Keyboard
- 230W Power Supply & Quality Case
- Real Time Clock/CMOS Memory w/Battery Back-Up
- Socket For 80387-sx
- Supports MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR-DOS, Concurrent DOS 386

$1395

12 MHz AT SYSTEM

- Landmark Speed = 15.9 SI = 13.4
- 640K RAM Expandable To 4 MB On-Board
- 1.2 MB Floppy Drive
- 1:1 Interleave Hard/Floppy Disk Controller
- 230W Power Supply & Quality Case Holds 5 Drives
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- 16/20 MHz Available
- Small Foot Print Case Also Available

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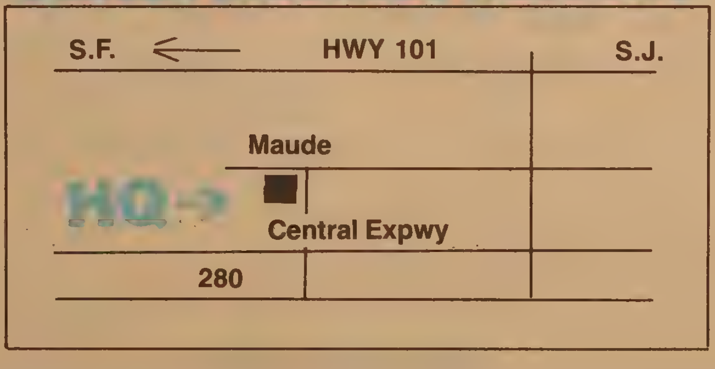

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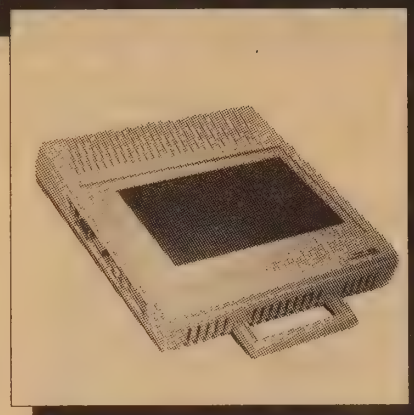

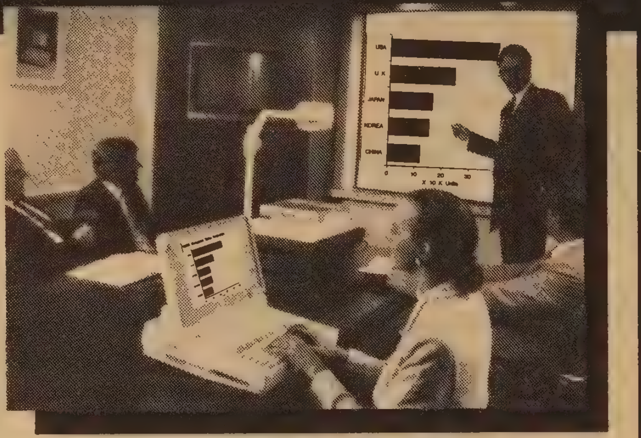

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CALENDAR
OF EVENTS

July 8 Introduction To Illustrator. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 8 Techniques Of Presentation Design. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 8 System Manager: Using The Operating System. Oakland. DataNet. Call: (415)465-9084.

July 8 System Administration: Managing A Novell Network Class. Oakland. DATAssociates. Call: (415)465-9083.

July 8 De Anza College Computer Mart. Cupertino. De Anza College. Call: (408)996-4581.

July 8–9 Philippine Fiesta Islands' '89 Fair. San Francisco. US Department of Commerce. Call: Mitch Larsen, (415)556-2134.

July 9 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

July 9 Computer Show. San Jose. East-West Computer Shows. Call: (415)388-8893.

July 10 Introduction To Telecommunications Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 10 Introduction To Graphics Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 10–12 Artificial Neural Networks Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: Institute in Computer Science, (408)429-4535.

July 11–13 The 1989 Desktop Presentation Graphics Conference And Exposition. Los Angeles. Cambridge Marketing. Call: 1-800-262-3378.

July 11 Microsoft Word Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 11 HyperCard Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 11 How To Successfully Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Company. Call: Beth Markus, (415)864-6770.

July 11 Macintosh SIG Meeting. Cupertino. Software Entrepreneurs' Forum. Call: Tony Meadow, (415)644-9400.

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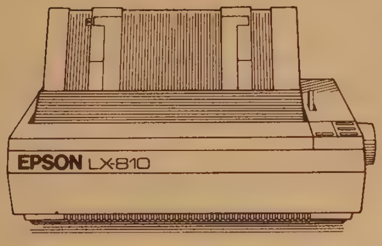

LX-810

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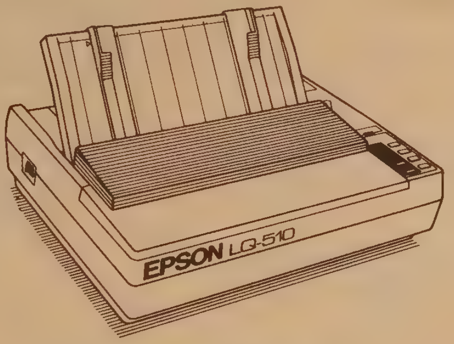

LQ-510

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Epson's LQ-510 provides outstanding value and letter quality excellence in a 24-pin printer.

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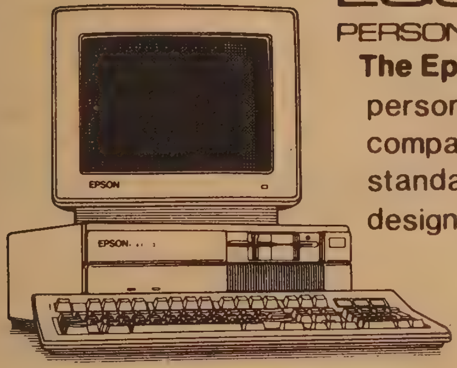

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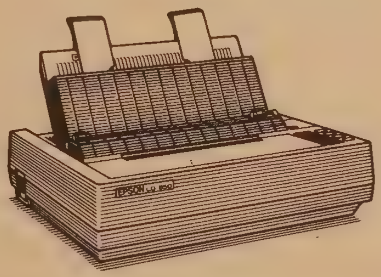
LQ-850



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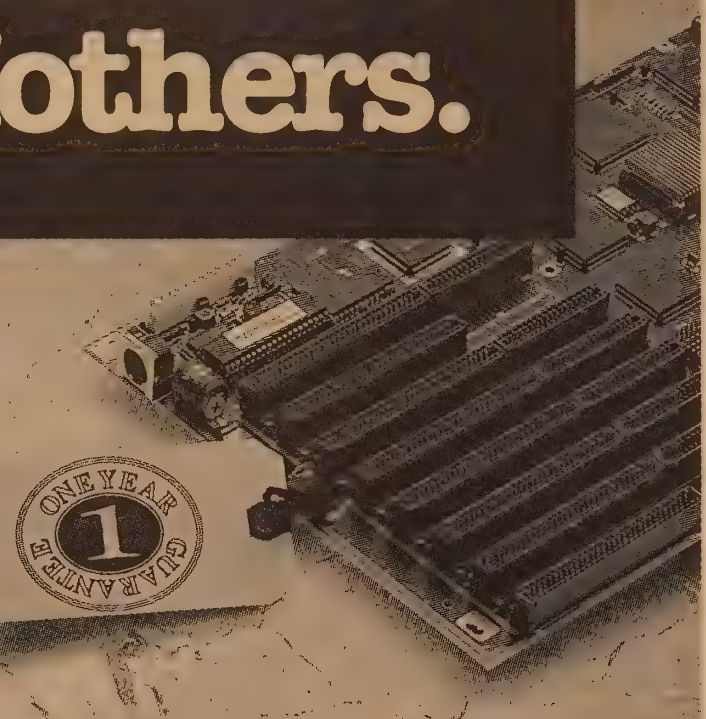

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We support 16 MHz 0 W/S with 80 NS DRAM and 12 MHz 0 W/S with 120 NS DRAM. Each board is available with 512 KB, 1, 2, 4, or 8 MB of On-Board RAM, with a 16MB maximum. Expansion slots can be specified either 6 or 8.

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CALENDAR OF EVENTS *continued*

July 11–14 Writing Better Computer Software Documentation For Users Course. Santa Cruz. University of California Extension, Santa Cruz. Call: (408)429-4535.

July 12 Basic Macintosh Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 12 STC Meeting: True Confessions: How We Got Into Technical Communication. Berkeley. Society For Technical Communications. Call: Marla, (415)549-3801.

July 13 PageMaker Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 13 PageMaker Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 13 IBM Technical SIG Meeting. Palo Alto. Software Entrepreneurs' Forum. Call: Mike Schmidt, (408)244-6826.

July 13–14 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

July 14 Open House. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 14 LAN Essentials: Installation & Configuration Class. Oakland. DataNet. Call: (415)465-9084.

July 14 LAN Basics: Network Installation & Configuration Class. Oakland. DATAssociates. Call: (415)465-9083.

July 15 Basic Macintosh Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 15–16 Dubner Turbo-Paint Workshop. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 15 LAN Trouble Shooting & Diagnostics Class. Oakland. DataNet. Call: (415)465-9084.

July 15–16 Computer Show. Oakland. East-West Computer Shows. Call: (415)388-8893.

July 15 Shop Till Ya Drop Computer Swap. Santa Clara. Richard James. 1-800-433-7469.

July 16 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

July 16 San Francisco Computer Show, Sale, And Swap. Fort Mason Center. Compu-Shows. Call: (415)931-0423.

July 17 Basic Macintosh Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 17 Intro To SunOS And UNIX. Sun Microsystems. Call: 1-800-423-8020.

July 17–19 An Introduction To 4.3BSD UNIX Internals: Data Structures And Algorithms Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

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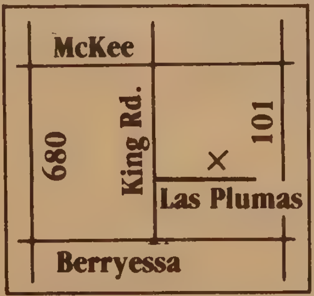

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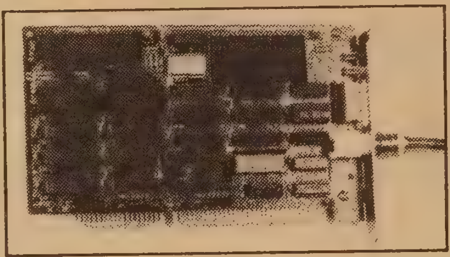

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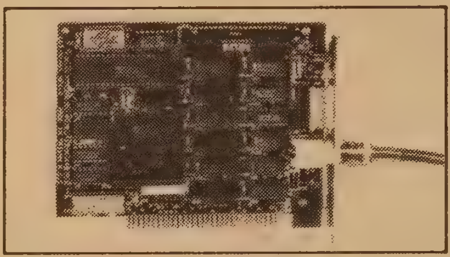

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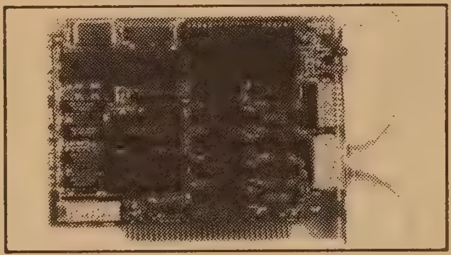

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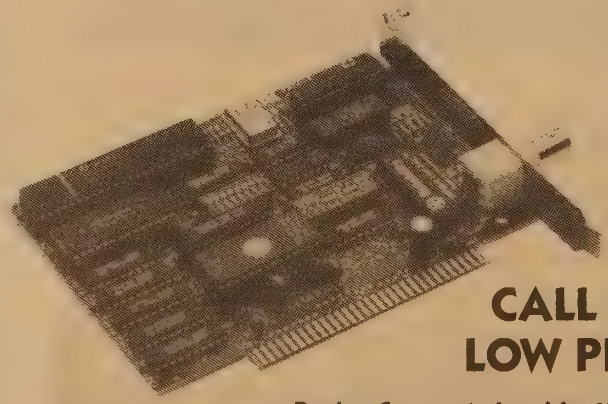

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July 18 HyperCard Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 18–21 UNIX Hands-on Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

July 18–19 Lotus 1-2-3 Advanced Techniques Workshop. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

July 18 OOP SIG Meeting. Mountain View. Software Entrepreneurs' Forum. Call: Dean Ritz, (415)691-6727.

July 18 Intro To UNIX For Programmers. Sun Microsystems. Call: 1-800-423-8020.

July 18. Links: Finding And Making Them Event/Exhibit. San Francisco. Ylem: Artists Using Science And Technology. Call: Trudy Reagan, (415)856-9593.

July 19 Basic Macintosh Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 19 Introduction To Microsoft Excel Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 20 PageMaker Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 20 SEF Meeting: Discussion Of Software Distribution Through Catalogs. Palo Alto. Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219.

July 20–21 An Introduction To 4.3BSD UNIX Networking Internals Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

July 21 PageMaker Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 21 System Manager: Using The Operating System. Oakland. DataNet. Call: (415)465-9084.

July 21 System Administration: Managing A Novell Network Class. Oakland. DATAssociates. Call: (415)465-9083.

July 21 MDTA Meeting: Office Automation: Local Area Networks. Walnut Creek. Mount Diablo Technology Association. Call: (415)932-4828.

July 22 Intermediate Mac Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 22–23 Quantel Paintbox Workshop. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 22 Shop Till Ya Drop Computer Swap. Oakland. Richard James. Call: 1-800-433-7469.

July 23 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

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1 FLOPPY 20MHZ 386

- AT BASE SYSTEM
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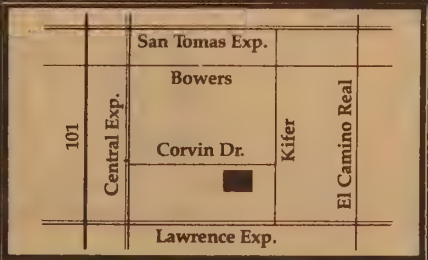

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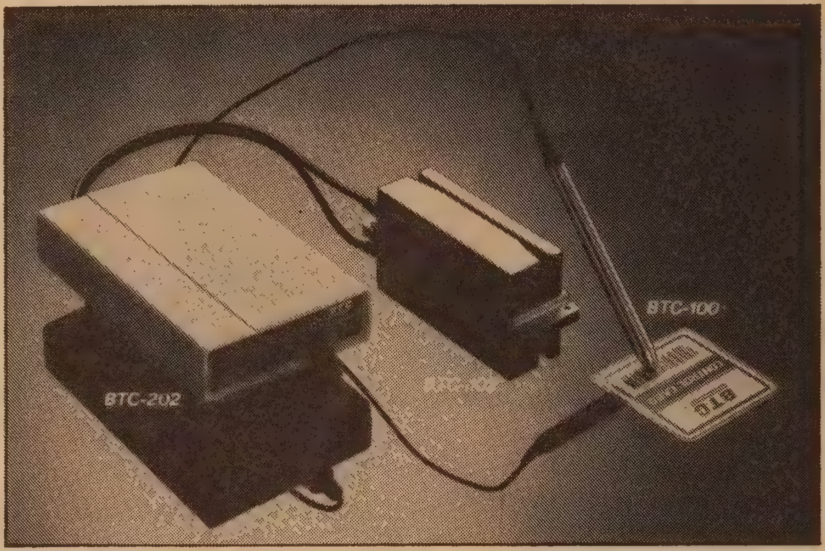

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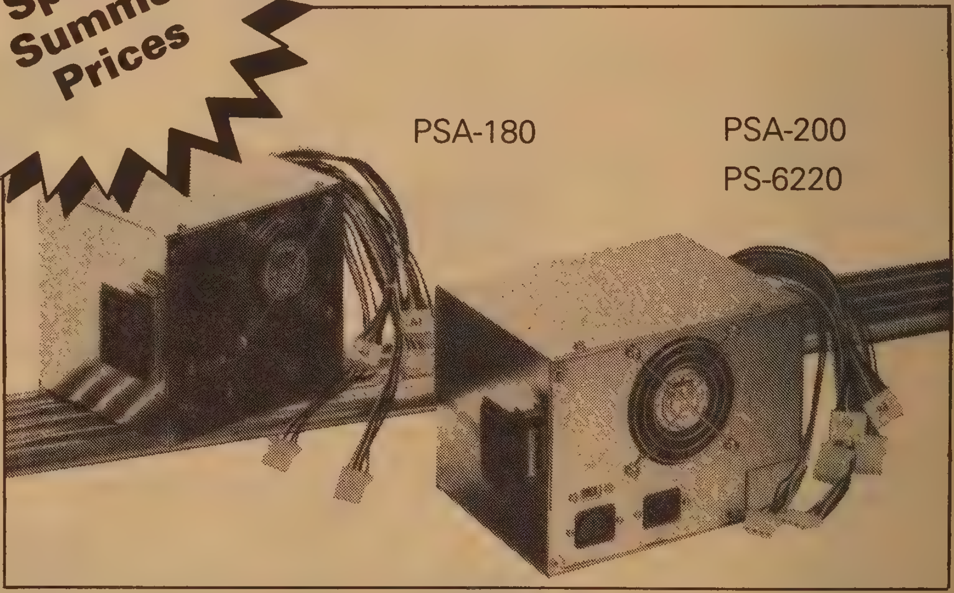

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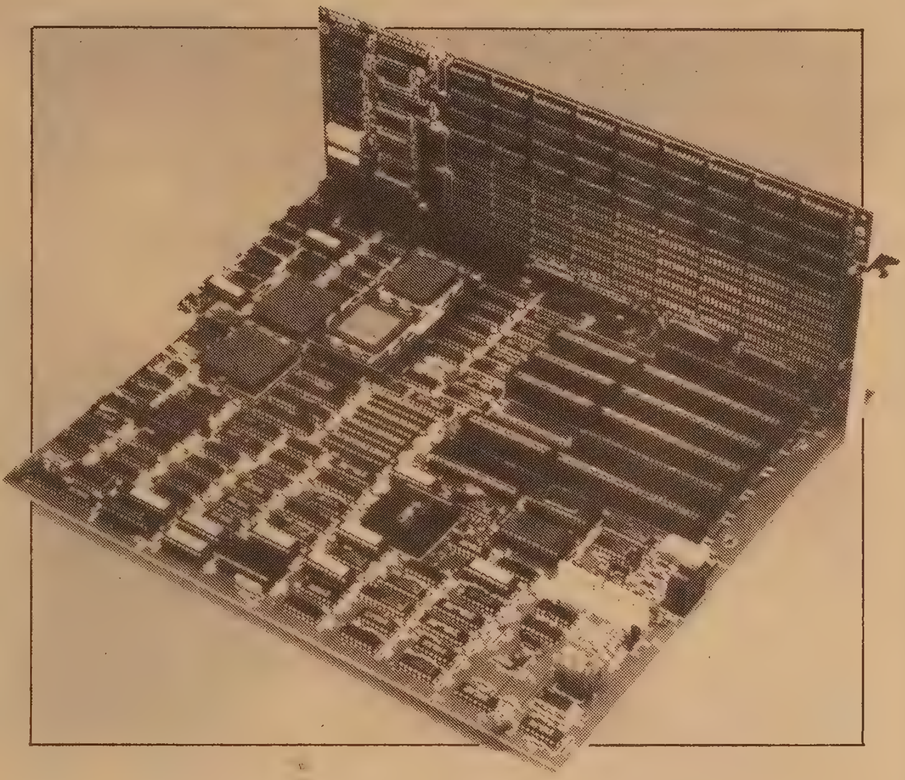

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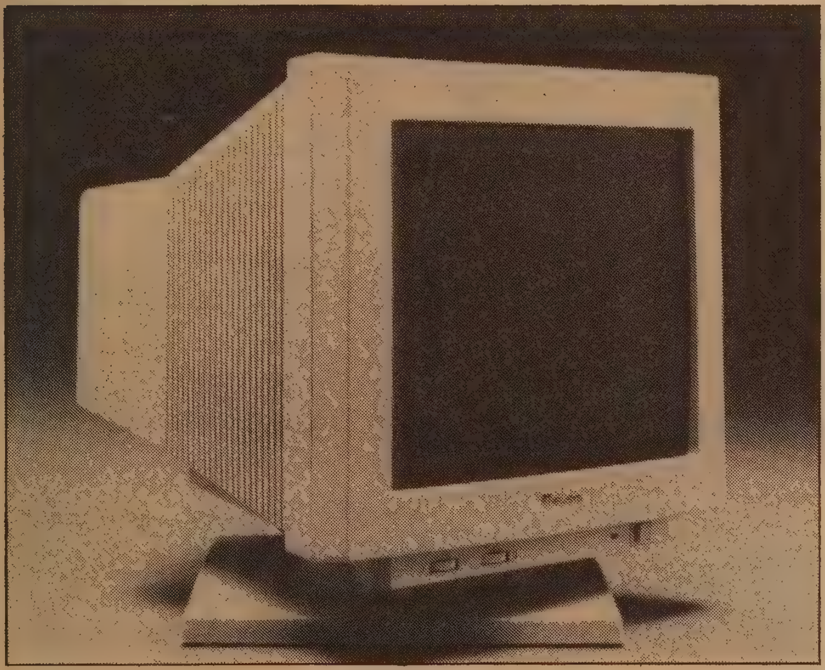

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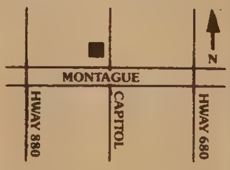

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July 23–25 Sun Expo '89. Santa Clara. PCI. Call: Tom Clark, (512)250-9023.

July 24–25 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

July 25 Microsoft Word Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 25–28 Software Project Management Tools & Techniques Course. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

July 25–28 Digital Signal Processing: Techniques & Applications Course. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

July 25 Automating Your Accounting System With Solomon—See What It Can Do For Your Business! San Francisco. J.C. Lukrich & Company. Call: Beth Markus, (415)864-6770.

July 26 Microsoft Word Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 26–28 Leadership For Technical Managers Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

July 26 Solomon III Seminar. Campbell. Systematic Solutions. Call: (408)379-1111.

July 26–28 Computer Graphics Of Fractals: Algorithms From The Frontiers Of Research Course. Santa Cruz. University of California Extension, Santa Cruz. Call: (408)429-4535.

June 27–30 Systems Engineering Course. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

July 27 Novell NetWare Breakfast Seminar. Sunnyvale. M&P Computer & Communication Systems. Call: Donna, (408)738-8578.

July 27 Marketing SIG Meeting. Palo Alto. Software Entrepreneurs' Forum. Call: Don Morrison, (408)425-7222.

July 28 Xerox Ventura Publisher Breakfast Seminar. Sunnyvale. M&P Computer & Communication Systems. Call: (408)738-8578.

July 29 PageMaker Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

July 29 Photo-Manipulation With Computers. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 29 WordPerfect Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

July 30 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

July 30 Computer Show. Sacramento. East-West

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- ** 1 Serial, 1 Parallel & 1 Game Port*
- ** CMOS Memory w/Setup Built-in*
- ** Real-time Clock/Calendar w/Battery Backup*
- ** 80287/80387 Math Coprocessor Support*
- ** Small Footprint Case*
- ** 200 Watt Power Supply*
- ** Enhanced 101-key Keyboard*

386/20 Mhz Basic System $1298

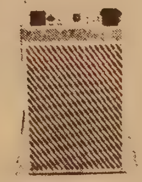
** Standard Features plus:*

- ** 20 Mhz 80386-based 0 Wait State Motherboard*

386/25 Mhz Basic System $1568

Standard Features plus:

- ** 25 Mhz 80386-based 0 Wait State Motherboard*



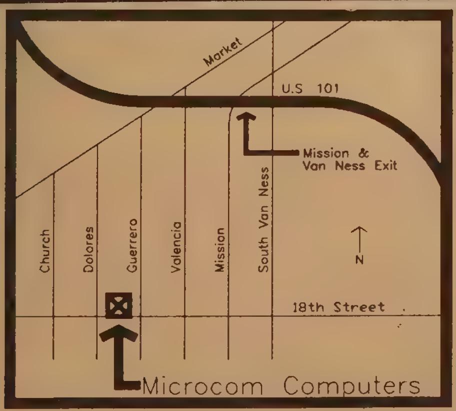
386 Memory Upgrades:
386/20 & 386/25:
Add $295 for 2 MB

Add $100 for Tower Case
w/ 230 Watt Power Supply

Computer Systems Price Matrix

	No Monitor/Card Included	Mono 720 x 350 1 Color	CGA 640x200 4 Colors	EGA 640 x 350 16 Colors	VGA 720 x 400 16/256 Colors	SYNC 800 x 600 16/256 Colors
286/12 (512 KB)						
Basic System	$598	$713	$873	$1,093	$1,193	$1,338
w/20 MB Hard Disk (65 ms)	$793	$908	$1,068	$1,288	$1,388	$1,533
w/40 MB Hard Disk (39 ms)	$923	$1,038	$1,198	$1,418	$1,518	$1,663
w/80 MB Hard Disk (28 ms)	$1,178	$1,293	$1,453	$1,673	$1,773	$1,918
286/16 (640 KB)						
Basic System	$838	$953	$1,113	$1,333	$1,433	$1,578
w/40 MB Hard Disk (39 ms)	$1,163	$1,278	$1,438	$1,658	$1,758	$1,903
w/80 MB Hard Disk (28 ms)	$1,418	$1,533	$1,693	$1,913	$2,013	$2,158
386/20 (1 MB)						
Basic System	$1,298	$1,413	$1,573	$1,793	$1,893	$2,038
w/40 MB Hard Disk (28 ms)	$1,653	$1,768	$1,928	$2,148	$2,248	$2,393
w/80 MB Hard Disk (28 ms)	$1,878	$1,993	$2,153	$2,373	$2,473	$2,618
386/25 (1 MB)						
Basic System	$1,568	$1,683	$1,843	$2,063	$2,163	$2,308
w/40 MB Hard Disk (28 ms)	$1,923	$2,038	$2,198	$2,418	$2,518	$2,663
w/80 MB Hard Disk (28 ms)	$2,148	$2,263	$2,423	$2,643	$2,743	$2,888

Call for configurations not listed.



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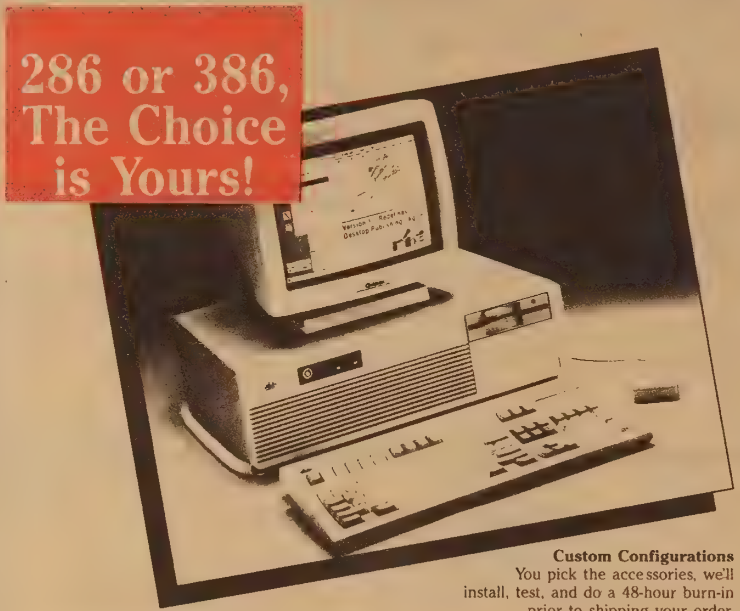

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'286/20MHz System $1,195
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'286/25MHz System $1,295
Norton SI 4.0 . . . . 28.2

80386 SYSTEMS:

'386/16MHz System $1,595
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'386/20MHz System $1,795
Norton SI 3.0 . . . . 24.0

'386/25MHz System $2,895
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Power Meter MIPS 5.791

'386/33MHz System $3,895
Norton SI 4.0 . . . . 40.1
Landmark Speed Rating . . . 58.7
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'286 Monitor and Hard Drive Options

286/10	MGA	EGA	VGA
20MB	$1,345	$1,695	$1,945
40MB	$1,495	$1,845	$2,095
286/12	**MGA**	**EGA**	**VGA**
40MB	$1,595	$1,945	$2,195
80MB	$1,795	$2,145	$2,395
286/16	**MGA**	**EGA**	**VGA**
40MB	$1,695	$2,045	$2,295
80MB	$1,895	$2,245	$2,495
286/20	**MGA**	**EGA**	**VGA**
40MB	$1,795	$2,145	$2,395
80MB	$1,995	$2,345	$2,595
120MB RLL	$2,195	$2,545	$2,795
286/25	**MGA**	**EGA**	**VGA**
40MB	$1,895	$2,245	$2,495
80MB	$2,095	$2,445	$2,695
120MB RLL	$2,295	$2,645	$2,895

'386 Monitor and Hard Drive Options

386/16	MGA	EGA	VGA
40MB	$2,195	$2,545	$2,795
80MB	$2,395	$2,745	$2,995
120MB RLL	$2,595	$2,945	$3,195
386/20	**MGA**	**EGA**	**VGA**
40MB	$2,345	$2,695	$2,945
80MB	$2,545	$2,895	$3,145
150MB ESDII	$3,345	$3,695	$3,945
386/25	**MGA**	**EGA**	**VGA**
40MB	$3,495	$3,845	$4,095
80MB	$3,695	$4,045	$4,295
150MB ESDI	$4,495	$4,845	$5,095
320MB ESDI	$5,295	$5,645	$5,895
386/33	**MGA**	**EGA**	**VGA**
40MB	$4,495	$4,845	$5,095
80MB	$4,695	$5,045	$5,295
150MB ESDI	$5,495	$5,845	$6,095
320MB ESDI	$6,295	$6,645	$6,895

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August 1 Newsletter Production With Ventura Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

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August 3 Mac Tips Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

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August 3 DOS Power Users Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

August 3–4 Administration Of BSD-Based UNIX Systems Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

August 5 LAN Essentials: Installation & Configuration Class. Oakland. DataNet. Call: (415)465-9084.

August 5 LAN Basics: Network Installation & Configuration Class. Oakland. DATAssociates. Call: (415)465-9083.

August 5 Computer Show. San Jose. East-West Computer Shows. Call: (415)388-8893.

August 6 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

August 6 Computer Show. San Jose. East-West Computer Shows. Call: (415)388-8893.

August 7 Introduction To Telecommunications Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 7 Introduction To Graphics Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 7–10 Advanced Project Management And Project Leadership Course. Santa Cruz. University of California Extension, Santa Cruz. Call: (408)429-4535.

August 8 Microsoft Word Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 8 HyperCard Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 9 Producing Brochures And Newspaper Ads On The Macintosh Class. Fort Mason, Building

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D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 10 PageMaker Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 10–11 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

August 11 Getting Help With Your Mac. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 12 System Manager: Using The Operating System. Oakland. DataNet. Call: (415)465-9084.

August 12 System Administration: Managing A Novell Network Class. Oakland. DATAssociates. Call: (415)465-9083.

August 12 De Anza College Computer Mart. Cupertino. De Anza College. Call: (408)996-4581.

August 13 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

August 14–16 C++ And The Macintosh Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

August 15 HyperCard Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 15–18 Project Management: Skills For Success Course. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

August 16–18 Finance And Accounting For Technical Managers Course. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

August 16–18 Visualization Workshop For 2-D And 3-D Data. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

August 17 PageMaker Part I Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 17 PageMaker Part II Class. Fort Mason, Building D, San Francisco. Computer Alliance. Call: (415)771-1671.

August 18 LAN Essentials: Installation & Configuration Class. Oakland. DataNet. Call: (415)465-9084.

August 18 LAN Trouble Shooting & Diagnostics Class. Oakland. DataNet. Call: (415)465-9084.

August 18 LAN Basics: Network Installation & Configuration Class. Oakland. DATAssociates. Call: (415)465-9083.

As a community service, MicroTimes *lists trade shows, seminar, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month, two months before the coverdate of the issue in which you'd like it to appear (i.e., the deadline for the March issue, distributed during February, is January 1). Send to: MicroTimes Calendar of Events, 5951 Canning St., Oakland, CA 94609.*

News about user group meetings and other regularly scheduled activities should be sent to User Group Network at the same address.

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- Socket for 80287
- Small Footprint
- AT 101 Keyboard

EV1700C
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- 1.2MB Floppy Drive
- 1 Serial & 1 Parallel Port
- Socket for 80287
- Small Footprint
- AT 101 Keyboard

EV1800B
286-10 MHz/0 WAIT $1100
- 512K DRAM, Expandable to 1MB on System Board
- 12.MB Floppy Drive
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- Socket for 80287
- AT 101 Keyboard

EV3000A
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ML38620
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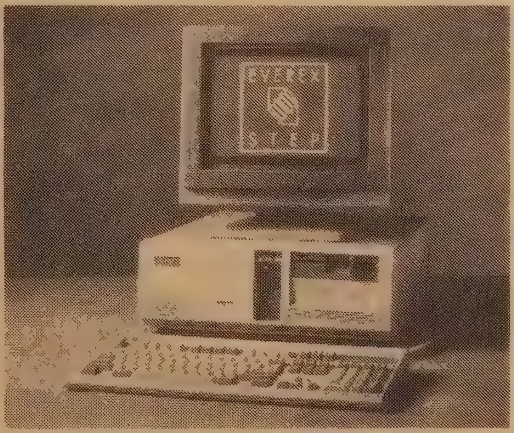

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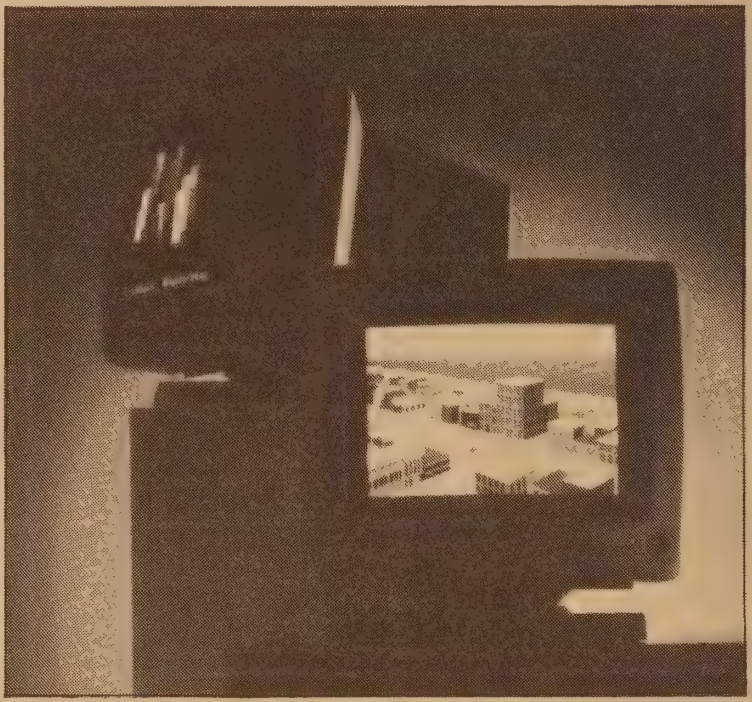

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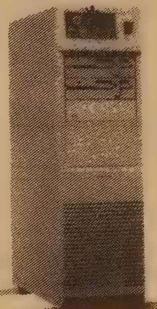

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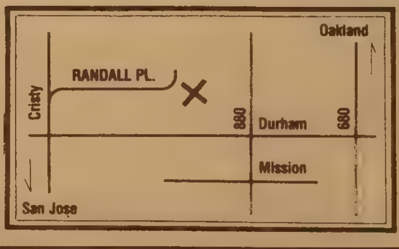

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- 1200 BPS Hayes Compatible Modem
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- Centronics Printer Port
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B119 DELUXE ANALOG JOYSTICK

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- High Speed Autofire Capability
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NEWS AND ANALYSIS

BY PAUL HOFFMAN

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Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

Pickets At Lotus, Licensing At Xerox, Networking At Apple

Taking one of the first public stands against the expanding role of lawsuits in the computer industry, 150 computer scientists and programmers from the Boston area recently picketed the Cambridge headquarters of Lotus Development Corporation. The group was protesting Lotus's lawsuit against Mosaic and Paperback Software over the "look and feel" of the *1-2-3* clone programs. The protesters objected to Lotus's attempt to prevent other companies from using the user interface of *1-2-3* in their own programs.

In a town more known for protests about minority admissions and nuclear weapons, the protest drew a great deal of support from students and professors who felt that lawsuits were stifling the creativity behind much of the computer industry. Although the protests were against Lotus, many protesters said that they were equally angry with Apple for its suit against Microsoft and Hewlett-Packard and the threats Ashton-Tate has made against dBASE clones.

The protest was organized by Richard Stallman, creator of the EMACS program and driving force behind the GNU operating system development team. He used the protest to form a new group, the League for Programming Freedom. The League will continue to pressure corporations to be more open with the technology they create and spend more money on moving technology forward instead of trying to prevent others from adopting the best parts of the new technologies.

Other protesters included MIT computer luminaries Marvin Minsky, Gerald Sussman, and Patrick Winston; Brian Kocher, president of the Association of Computing Machinery; and Ray Solomonoff, a widely respected mathematician.

Xerox Attempts To License User Interface Technology

Jumping into the user interface fray with both feet, Xerox announced that it expects any manufacturer that has a user interface that uses technology similar to what Xerox developed in the late 1970s and early 1980s to buy a license and pay royalties.

This announcement was met with mixed reviews by computer lawyers, many of whom contend that it is much too late for Xerox to begin demanding licenses. Others say that it is high time that Xerox cleared the air about what technologies it thinks it owns and how much it will charge others to use it.

Before the announcement, Xerox had only made licensing agreements with two companies: Sun Microsystems last year and Metaphor Computer Systems last month. It was the announcement of the Metaphor deal (which followed a lawsuit by Metaphor over the interface) that caused Xerox to announce that the interface was for license.

Metaphor sued Xerox earlier this year because it felt that Xerox had begun sabre-rattling over Metaphor's wide-ranging deal with IBM. That suit was meant to settle the issue of whether Xerox owned anything on which Metaphor might infringe in Metaphor's user interface. Instead of taking the case through the legal system, Xerox decided to settle early by giving Metaphor a license to all Xerox copyrights and patents relating to the user interface. However, no one is really sure what those copyrights and patents are and whether they would stand up in court if challenged.

> **"The industry's reaction to Xerox was generally one of derision and disregard"**

Xerox has been exceedingly lax in specifying what it owns and in making any claims before now. Since the basic copyright that Xerox claims was filed in 1981, its arguments are even more suspect, because unenforced copyrights are usually denied if the owner tries to claim them after they are widely copied. Also, Xerox's claim of copyright is fairly weak on its face, since few companies have copied the look or feel of the Xerox system exactly. It appears that Xerox is attempting to claim copyright on basic ideas like icons and scroll bars.

The industry's reaction to Xerox was generally one of derision and disregard. Apple said that it saw no need to license anything from Xerox, since Apple's ideas were only partially derived from the Xerox interface, and Apple had added a substantial amount of creative work to it before releasing their own Macintosh interface. Other companies said that they would have considered getting a license five years ago but thought that it was much too late for Xerox to be asking for one now that the general concepts have received widespread use.

Although some lawyers were recommending that their clients pursue Xerox's license, many said that it appeared that the license would provide nothing other than a false sense of security. Xerox refused to

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announce publicly how much it was asking for the license or what protection the license would give, although they said that the fee was "fair but not nominal."

The move by Xerox was credited to William Lowe, now executive vice president at Xerox but formerly president of the personal computer division at IBM. A Xerox spokesperson said that they thought the move would "raise the company's profile in the industry."

Toshiba To Sell SPARC UNIX Computers Into Mass Market

Giving Sun Microsystems an additional boost in its efforts to make its SPARC CPU architecture an industry standard, Toshiba announced that it will begin to produce SPARC-based systems in a variety of sizes. Toshiba said that it will put the systems into the smallest boxes possible, which means that it could possibly make the first portable SPARC system using proven Toshiba miniaturization technology.

Toshiba introduced UNIX systems to Japan and had a long history of supporting UNIX on as many of its models of computers as possible, even when the market didn't really support it. While other SPARC manufacturers are concentrating on the middle and high end of the market, Toshiba could make the first stab at creating a fast, flexible, low-end UNIX system.

Toshiba will not manufacture its own SPARC chips, but will instead buy them from a Japanese or American supplier. However, it licensed a wide variety of SPARC-compatible software from Sun, including the Open Look user interface and Sun's NFS networking software.

Toshiba's move is interesting in that many vendors of high-end PC compatibles are failing miserably in the UNIX market. XENIX for PC compatibles, the most widely-used version of UNIX, has barely caught the attention of anyone outside of the standard UNIX marketplace. This is partially due to its basic slowness, even on 80386 processors, and also due to its archaic user interface.

If Toshiba can create a small, efficient, inexpensive computer based on the SPARC CPU that is easy to use, it could make users and software vendors much more interested in SPARC-based UNIX packages. The Open Look user interface is similar to the Macintosh in ease of use, so a small UNIX system could be easily adopted in the same markets as the Macintosh if enough software vendors support it. If Toshiba could cram the SPARC CPU, enough RAM memory, and a reasonably fast (although not necessarily large) hard disk into a portable package, Toshiba could have a logical extension to its very popular portable PC line that would last well into the 1990s.

Toshiba said that it expects its first SPARC system to be available within a year, and it will probably give the industry some hint about how it will proceed from there.

IBM Introduces OfficeVision Applications For PCs, Minis, And Mainframes

Hoping to tie PCs running OS/2 more closely to its mainframes, IBM announced a series of system and application programs that are its first comprehensive series of products compliant with its SAA program and user interface.

The OfficeVision series of programs will run on the full range of IBM computers and will allow users of one type of computer to use the same application on other computers with little retraining. In addition, all the programs will be able to retrieve data from a network, so that data can be stored on a mainframe and accessed automatically by any computer on the network.

The programs will be available later this year, when IBM and Microsoft release the next versions of OS/2 that contain the software needed to connect to the network. The initial interest in the programs will be for current mainframe and minicomputer users who want to see how the programs that they already use will look in the new versions.

IBM noted that to run these programs on PS/2s requires huge amounts of RAM memory. Some applications that require the use of OS/2 Extended Edition could require 8 Mb of RAM just to be able to run.

Save Some Trees: Stop Sending Stupid Press Releases

I freely admit that this is not an original idea. It was started a few years ago by John Dvorak, who complained about useless press releases from silly companies. The anti-junk call was recently picked up by Denise Caruso, computer correspondent for the San Francisco *Examiner.* She spent her entire Sunday column (usually devoted to at least two rumors and the discovery of some interesting small company) pleading with computer companies to stop sending useless press releases to everyone on their lists and for direct mail companies to be more selective about who gets their junk mail.

I'll join that chorus in hopes that the computer industry can start doing its part to reduce paper waste and to stop wasting each other's time. Every month I get a stack of at least 150 press releases. You'll notice that I don't try to cover 150 items in my column. In fact, I rarely cover items that I didn't hear about from friends in the industry or in the regular and business press.

If you've read my column a few months in a row, you could get a feeling for what I write about and what I don't. So why do I get 50 letters a month "announcing" that some person, usually a white man in suit, has been promoted from one position in a company to another? Ego on the part of the company (they think that somehow someone cares about their middle management) and desire on the part of their PR firm to generate more money. The only places where these letters might get printed are in those small print blocks in the business sections of newspapers that need to fill space so that the sports and investment ads don't overwhelm the lack of news.

Why, then, do the PR agencies send out thousands of copies of these letters to magazines that have never run a single item like them? Ego and money churning.

Not quite as bad as the middle-management-promotion letters are the announcements of new versions of products. These are certainly of value to some magazines and to the users of the programs, especially if the company does the standard trick of losing 20% of its registration list every time it sends out an upgrade notice (Microsoft is the industry leader in this field). However, why send these letters to computer newspapers that never were interested in the product initially? And why send more than one letter to the paper? *MicroTimes* often gets the same press release sent to every person on the masthead. This is clearly a sham on the part of the PR agency who tells the client "We have a list of xxx names in the press and we'll send your press release to every one."

I am not complaining that these people are making my job difficult: I can throw out spurious letters as easily as anyone. I am worried about the environment, both the number of trees we are destroying and the mounds of trash created by the discarded, unread releases. The number of releases sent out could be easily cut in half by culling out duplicates in the mailing lists, and could probably be cut in half again by being selective about which magazines get the releases at all.

Reducing the piles by 75% is certainly a good start on reducing the adverse impact of public relations on the world's forests. If the environmental argument is a bit too esoteric for you, there is a serious financial impact on companies creating letters that will only be discarded. With the coming recession and increasingly effective competition from outside the US, companies should be taking a hard look at how to be more productive. Spending thousands of dollars on shotgun PR or direct mail is not productive. Targeted direct marketing over the telephone has a much greater impact; you get a sense of whether the person being called will ever be interested in what you are saying; and it doesn't waste paper. It also creates a direct link to the intended recipient, something that few companies are very good at these days.

Personal communication will also virtually eliminate worthless press releases: what PR hack wants to hear 1,000 people respond to the question "Would you be interested in us sending you a press release about Joe Whitemaninsuit being promoted to VP of Finance?" Maybe this will teach them what is really important in the industry and what is useless fluff.

Direct mail advertising is another villain here. Even the most optimistic of direct mailers hope for 5% response. It's time for the advertising mavens in the industry to come up with other ways of marketing. Everyone who says that "direct mail is the only way" should be forced to spend a week sorting recyclable products at the local dump for every direct mail piece they produce. They should also be prohibited from spending any vacation time in a forest. The greenhouse effect isn't just cars and factories: it's lack of trees, or, more precisely, overabundance of wasted paper.

—Paul Hoffman

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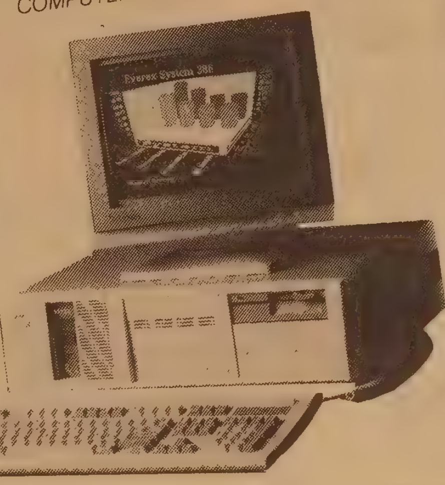

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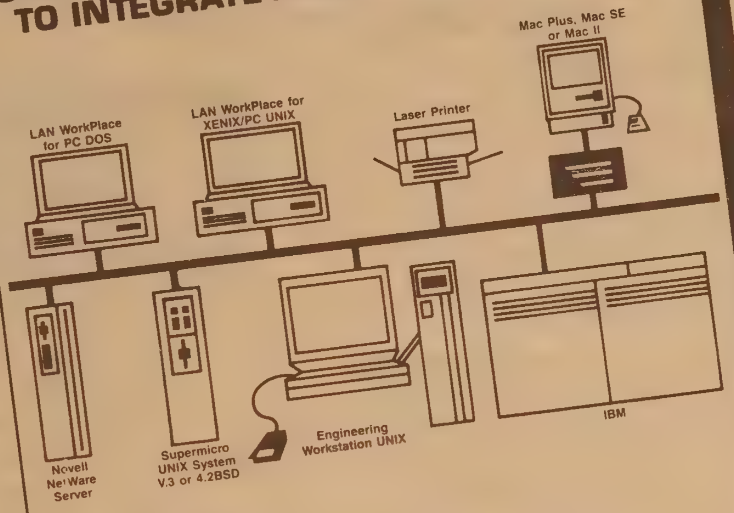
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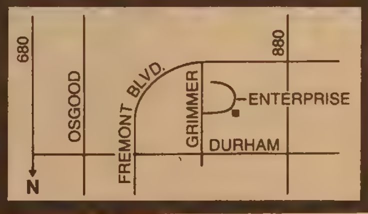

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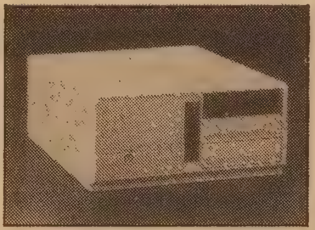

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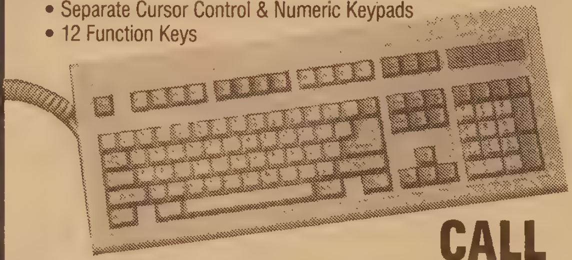

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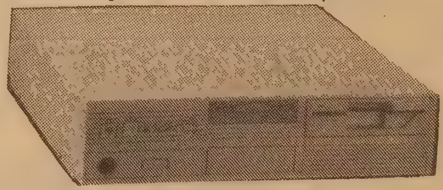

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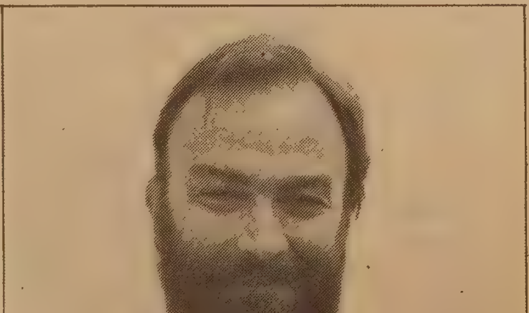

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NEWS AND ANALYSIS

Apple Gets Networking Fever

In case you haven't gotten the hint from Apple's style in the last few years, Apple makes announcements in bunches. One bunch come at MacWorld Expo in January; then there's often a non-Mac announcement soon thereafter, then a lull until mid-spring.

On June 12, Apple made a large series of Macintosh-related announcements related to networking (Apple called it "connectivity"). None of the announcements were all that shocking, since they were generally announcing Apple selling products that third parties were already doing as well, probably for the same price or less. However, the sheer number of products in all areas of networking and the breadth of the announcement made it important to the rapidly growing number of sites that have a Macintosh and a network of other computers such as minicomputers and mainframes.

As usual, the topics of the discussion were widely reported in the trade press for weeks before the announcement because Apple had a press conference nearly a month earlier and handed out lots of literature (minus photographs) for all the products. Also as usual, many newspapers and magazines reported the highlights and pretended that they got the info from "sources." In fact, this article was written before the announcement and only checked for accuracy and inclusion after the announcement.

The announcement may seem jumbled due to the variety of products that it announced, but that was fine with Apple. The message is that Apple could support almost any type of networking with the non-Apple world.

Hardware and software vendors for the Macintosh have become accustomed to a common problem: no one knows that they exist until Apple competes with them. Fortunately, Apple continues to charge high prices for both the Macintosh and Apple-brand peripherals and software so that third-party developers don't get crushed when Apple moves into a market. Since every Mac has the basic networking software built into it, third-party developers have a huge advantage over their counterparts in the IBM world. Instead of having to pray that they are supporting the right networking software standard, Mac vendors have a known base on which they build. Apple's recent announcements give that base a much-needed endorsement from Apple itself.

In typical Apple style, the announcements were not for products that were ready yet. Most of the products will ship within the next six months, some as soon as next month, according to Apple. The announcements included four cards for the Macintosh II line: an EtherTalk card for high-speed transfer on most networks, a coax/twinax card for connecting to IBM SNA networks as a terminal, a token-ring card for connecting to other IBM networks, and a new serial card for standard RS-232 connections. Notably left out of the hardware announcements were any cards that can be installed in Macintosh SE's or SE/30s. It is not clear whether these cards are forthcoming, whether Apple does not feel that these are as important parts of non-Apple networks as the

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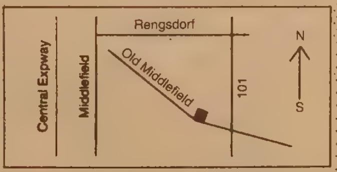

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NEWS
AND ANALYSIS

II, or whether Apple will rely on third-party cards for these systems. Although many of the Macintoshes sold to large companies are Mac IIs, there is certainly a strong showing from SEs and Pluses.

Apple is, however, helping managers of AppleTalk networks with its InterNet Router, which lets you connect AppleTalk networks with Ethernet and token-ring networks. Apple hopes that this will prevent minicomputer and mainframe sites from requiring that all nets within a company must be of one type. The router allows for (supposedly) transparent communications between the three types of networks. Thus, if a department in a company that has standardized on token-ring wants to have just Macintoshes and doesn't want to buy all Mac IIs, they can use SEs connected by AppleTalk with one Mac II connected to the token ring running the router.

The software announcement most likely to get the attention of the IBM mainframe world is *MacAPPC*, the long-awaited software that would let Macs act as servers and clients on SNA networks. *MacAPPC*, a method for passing data and instructions that IBM hopes will become universal on its networks, will eliminate a large barrier to Macs in mainframe environments, since Macs will now be able to do everything that PCs with APPC software can do. Apple also announced other products that let Macs act like 3270 terminals, the most popular type of terminal used with IBM mainframes.

The other announcements were for networking software. Apple announced a greatly improved version of *AppleShare PC*, its main software product for hooking PCs and Macs together over LocalTalk networks. Apple has fallen far behind other network vendors, notably TOPS, because their software for the PC was hard to use and not very flexible. The new *AppleShare PC* software should help get Apple more sales, although they will have a hard time displacing TOPS. They also announced *MacX*, a package that lets any Mac act as an X server and therefore participate in many of the newer UNIX networks. As more X-based software becomes available, this product will help Apple sell the Macintosh as standard X terminals that can, of course, also run all the regular Macintosh software. A different product, *MacX25*, will let Macintoshes become servers for X.25-based networks.

Apple also announced it will produce servers for its CL/1 database language that allow databases to be shared over networks. This software, which runs on minis and mainframes on a network, allows Macs to access data from databases as if they were on local systems. CL/1 relies on the emerging SQL standard for data queries. It seems unlikely that many people will be interested in the CL/1 network since it is being supported almost exclusively by Apple. Instead, they will go with the standards that are coming from Microsoft and IBM. For CL/1 to survive, it will have to coexist well with whatever SQL-based server software becomes popular. Since the CL/1 packages are the furthest from being released, it is not clear if CL/1 will even be able to get a foothold in the market. ■

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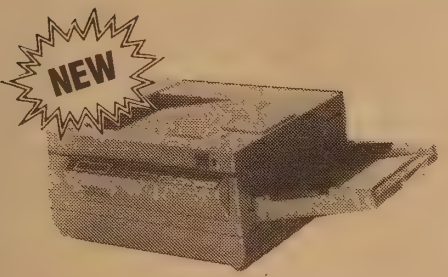

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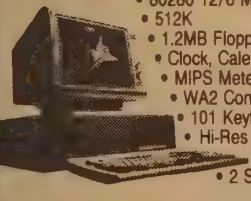

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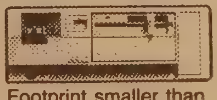

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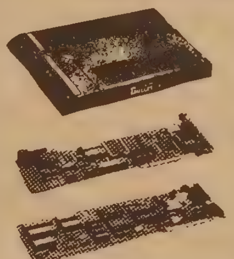

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REALIZABLE FANTASIES • BY JIM WARREN

Collaborative Decision-Making

This column presents practical proposals for microcomputing's innovators. Be one.

Toys Vs. Tools

For well over a decade, I have said: Micros are and will remain primarily interesting, challenging, provocative—sometimes infuriating—toys, relatively speaking, until they have access to significant information in machine-readable form, useful for significant decision-making.

Example of significant applications to date: Spreadsheets used for major financial analysis require data usually laboriously keyboarded by the decision-maker. Computer-aided drafting requires drawing details, usually clicked/keyed by the decision-maker (though stock "parts drawings" are becoming available). Other examples abound (as do exceptions).

For consumer use, libraries of information—engineering, medical, legal, governmental, literary, etc.—must become economically available (low-priced) in machine-readable form—CD-ROM or network access.

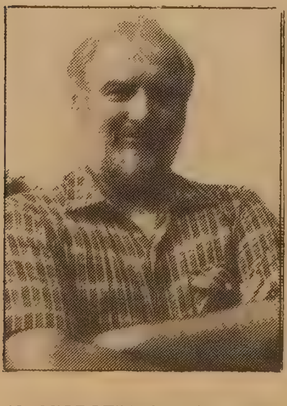
Perhaps more important—computer assistance will become invaluable when time-sensitive information is "published" by digital broadcast (a future column will detail the DataCast Project). Such practically useful information includes news, but—of more daily utility—includes grocery prices, real estate listings, auto sales, theatre schedules, restaurant offerings, gas prices, community news, school information, etc.—the information most individuals use in daily decisions.

Become an electronic publisher; become a digital broadcaster. Price services at consumer prices and look to mass consumption for your fair profit. (Please note that broadcasting avoids the costs of physical media—e.g., floppies or CD-ROMs. It also avoids mass distribution costs and delays.)

Computer-Assisted Collaboration, Part 2

Expect ongoing mention of this topic. I remain convinced that computer-augmented group decision-making will become one of the most significant applications of computing.

Context: Interconnected personal computers—perhaps including a mainframe—used by decision-makers. For example—programmers or engineers collaborating on a product, two or more educators coordinating educational improvement, team-directed projects, shared division leadership, corporate coordination, attorneys/clients drafting agreements—and maybe, someday, informed and equitable governmental processes.



Copyright © 1989 by Jim Warren. All rights reserved. Jim Warren founded the West Coast Computer Faire, *the* Silicon Gulch Gazette *and* Infoworld *newspapers,* Video Initiative *and the* DataCast *proposal for broadcast-based paperless electronic newspapers utilizing personal computers. He was the founding host of the PBS* Computer Chronicles *series, founding editor of* Dr. Dobb's Journal, *and founding president of the Microcomputer Industry Trade Association.*

Robust Teleconferencing

Minimum groupware should permit multiple personal computers (or terminals) to "teleconference" over most networks/interconnections. They would show identical displays—except perhaps for an individualized site line. Actions by any active participant should immediately be displayed everywhere. This includes pointer movement, text/drawing changes, display of temporary cross-references, authorization sign-offs, etc.

Participants need not be in the same room—nor the same nation—to immediately share the discussion and consider proposals in such shared development. Yet each may highlight items of interest, suggest changes, or cite references. Each might retain an immediate personal copy; each may "sign" the agreed-upon result.

Minimum groupware should allow individuals to be active participants able to discuss and authorize proposals. It should also facilitate "observers." A passive observer could watch all the discussion, but not point or otherwise participate. An active observer could point and comment, but not have their input/comments/questions permanently recorded or finally included unless authorized by an active participant.

Robust Groupware Balloting

At decision-points, groups poll their members. Groupware should include polling tools more extensive than traditional for/against vote-recording. Some options (please propose others):

Consensus-voting: If no one opposes a proposal, it is accepted. This permits decision-makers to avoid stating active support for a proposal with a "for" vote. (Among other things, consensus-process was crucial in constructing the landmark UN Law of the Sea Treaty. Most countries were unwilling or politically unable to record active support for some of the negotiated positions within the complex agreement.)

Intensity-voting and multiple choice: Adequate groupware should facilitate intensity-voting—1-to-3, 0-to-10, etc. Similarly, it should allow multiple-choice voting—1 of 5, 2 of 7, 3 of 4, etc.

It should support several vote-results displays. It should also support "calling the vote" options—identified vote-caller, unidentified vote-caller ("Go for it!" someone shouts from the crowd), called only by the presiding officer, etc.

Note possible changes in parliamentary procedure that groupware may suggest.

Egalitarian Processes

Our society has moved beyond blind, docile obedience to the dictates of "proper authority." Since the '60s, more and more people are demanding more participation in decisions that impact their lives, communities, and work. (Chinese "dissidents" are not the only ones demanding increased democratization.) **Opinion:** This egalitarian demand is just. Adequately implemented, it leads to better decision-making and more robust solutions.

Opinion #2: Many in power traumatically resist such sharing of authority—as some "subordinates" resist accepting associated responsibilities and consequences. But, this egalitarianism will transcend old corporate and community dictatorships (others will simply die)—and many autocrats will bitterly never quite understand what happened.

Computer-assisted group cooperation can greatly assist and enhance these worthy societal and workplace improvements.

Doug Engelbart: Visionary Becomes Realist

Many of my suggestions about computer-assisted group processes derive from working with the topic's visionary and great-granddaddy—Doug Engelbart, in Stanford University's new Bootstrap Project, which Doug recently founded and directs.

Whereas microcomputing is just now addressing this computer application—with bumpy hacks at groupware products—Dr. Engelbart dreamed up many of these concepts in the late '50s and implemented such a system 'way back in the mid-'60's at Stanford Research Institute. He founded and directed the Augmentation Research Center and its Augmented Knowledge Workshop, all implemented on an old SDS-940—one of the earliest timesharing systems.

Aside: Doug also originated the mouse, created the first two-dimensional editing system (display-oriented), and was the first to demonstrate such things as remote procedure protocols, mixed text and graphics, and shared-screen viewing (as above)—all implemented over 20 years ago. (He also ran ARPA's early Network Information Center, begun in 1967.)

The Bootstrap Project is an effort to collect and circulate Doug's knowledge and insights, develop the best in groupware design, and place it in the public domain.

Share Where? Share Here!

Send suggestions for your practical computer fantasies to Jim Warren, Realizable Fantasies, 345 Swett Road, Woodside CA 94062. Published proposals will be attributed to their authors unless anonymity is requested. ■

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Education: The Debate Rages

Jim Warren's June column "Decent Education: A Realizable Fantasy?" prompted a deluge of responses. In the interest of promoting the relatively free exchange of ideas that has been one of the major benefits of personal computing, we're devoting this month's Industry Issues section to some readers' comments and Warren's responses.

It has been suggested by various respondents, as it was suggested to David Bunnell of PC Week *when he wrote his famous Atlanta editorial some years back, that it is "inappropriate" for a computer publication to address issues beyond the bits and bytes. As our past coverage of issues from free speech to gender equality might suggest, we disagree. The products you buy, the tools you use, and the options you have for using them are profoundly influenced by factors beyond benchmarks and product announcements. High-tech corporations work extensively to influence legislation; industry leaders such as John Sculley and Robert Noyce actively endorse political candidates and testify before Congress on matters of concern to their companies' and the industry's perceived interests, often on issues such as education policy.*

Intelligent and strongly opinionated people, often with overt or hidden social engineering agendas in radical disagreement from each other, created the personal computer industry and continue to be one of its distinguishing hallmarks. The people, the ideas, the long-term picture, and the products are inextricably intertwined in this industry; as numerous research institutes and industry analysts will attest, none of this occurs in a vacuum.

We strongly urge readers to write to us and express their views, and we expect at least as wide a variety of viewpoints from that quarter as we get from our writers, an intelligent and strongly opinionated lot who rarely agree among themselves.

—Mary Eisenhart

Greed?

I agree with Jim Warren that US schools are in a sorry state, and that it's entirely the fault of money-grubbing union zealots and faculty deadwood. With the kind of broad political and financial support teachers enjoy from this society, only shirkers and fanatics would waste time on pointless, disruptive unionization.

I was shocked to discover that teachers are paid so much for such easy work. It's disgraceful that after 20 years a teacher might be making as much as the average Silicon Valley engineer. All those creeps care about is money; just look at the number of money-grubbing teachers who take temp jobs during their overlong vacations. Despite the massive outpouring of public support that always follows unions' demands for smaller classes, more prep time, and better facilities; despite the warm reception such sensible changes receive from school boards and administrators; and despite the fair, balanced reporting of both economic and non-economic contract issues by journalists like Warren—teachers always settle for higher salaries alone. As President Bush said recently, schools don't need more money, they need more dedication.

As Warren suggests, we should all write to our state legislators demanding modification of tenure laws, lower teacher salaries, and elimination of cost-of-living increases. When tenure is weakened, districts will be able to fire the greedy teachers high up the salary schedule. Then the winning combination of lower pay and less job security will ensure that the entry-level teachers who replace them are truly dedicated. Better yet, follow the lead of those progressive districts that hire mostly part-time teachers. Not only do they get paid less, but the district doesn't have to waste all that money on health insurance or retirement plans.

Once upon a time America knew how to handle troublemakers, but, as in so many other fields, we've lost our lead to foreign competitors. While we study field leaders like Poland for long-term solutions to the problem, parents must have the right to choose. Concerned parents from various communities—the affluent, the creationist, the caucasian—have taken steps to ensure top-quality education for their children by starting private schools. Such defenders of quality education must be free to redirect their tax dollars from corrupt public schools to these superior institutions.

Jim, why waste your wisdom on the computer industry? School districts pay up to $100,000 a year for such insightful union-busting advice. It would be terribly sad for us *MicroTimes* readers to lose your monthly dose of wit, but we could take consolation in your moving on to a better cause.

Robert Lauriston
San Francisco

Politics: The Path To Insolvency?

It seemed unusual—a political article in a computer mag? In case you are planning on more of the same in the future, I wish to express my opinion. I hate to see articles like Jim Warren's that might hasten your demise for the following reasons, generally accepted by the owners of solvent non-political magazines.

1. One-sided political articles on evenly divided controversial subjects can cost you up to 50% of your customers if you persist long enough.

2. Most of your customers have some college education. Early in college most students are taught that arguments by analogy such as Warren used have no true argumentative value and are only useful for politicians talking to uneducated groups.

3. Many persons react very negatively to self-serving demands such as Warren's desire for a government subsidy to help him send his children to private school.

Please keep publishing a good magazine *about computers!*

Charles M. Larson
Whittier

Jim Warren responds:
Avoid politics? Oh, come now. Should tech rags shun mention of political issues impacting DRAM price/availability, export snarls that hamper our international competitiveness, regulations limiting digital-audio features, public access to unclassified databases, or look-and-feel litigation and legislation?

Or is it only the quality and costs of our education system—that pervasively impacts our technological and national future—for which we should avoid proposing improvements?

Controversy causing demise? One publisher of "non-political" periodicals who habitually published highly-biased political content remained sufficiently solvent to build a castle in San Simeon. Other refuting examples abound.

But we agree: If political and social diatribe dominated these pages, technologists would probably pick up fewer of our free copies. However, it doesn't, and they won't. Those discomforted by such relatively rare content may quickly avert their eyes, lest they encounter disturbing thoughts. Nonetheless, the costs and harm of such disregard will continue/escalate until enough people collaborate in designing and implementing positive change—which requires discussion of alternatives, even controversial ones.

Although Hearst remained solvent without editorial balance, MicroTimes *prefers to air opposing views. Note that these letters on this subject far exceed the length of the original column.*

Regarding analogy: Obedient drones might be trained to blindly avoid analogy. However, intelligent individuals constantly utilize analogy as a powerful tool enhancing learning, comprehension, and insight. To avoid its pitfalls, one simply evaluates analogies for accuracy of fit.

As for seeking self-serving subsidies for private schools: I have no children to be so self-served, and I am Trustee of a 25,000-student public school district.

However, be assured: We, the people, WILL pay the costs of the quality of our childrens' education—by government subsidy and personal expense. We may subsidize—and demand—well-prepared, conscientious, diligent teachers, and vigilently dismiss the minority who are costly deadwood. Or, we WILL incur ever-increasing costs for ill-educated fellow workers, sloppy engineerin,g and shoddy service (technology issues), plus escalating costs of public welfare, emotional illness, and a massively-expensive criminal justice system.

Misguided Fantasy

Re Jim Warren's article "Decent Education: A Realizable Fantasy" in *MicroTimes*, perhaps "misinformed fantasy" or "wishful thinking fantasy" would be a more appropriate subtitle for his article.

First, about the CBEST examination: the teachers' unions opposed it when it was proposed. The CBEST was among the package of reforms by then newly elected Superintendent of Public Instruction Bill Honig. The requirement that substitute teachers pass the CBEST examination was not, as Mr. War-

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Copyright © 1989 by Jim Warren. All rights reserved. *Jim Warren founded the West Coast Computer Faire, the* Silicon Gulch Gazette *and* Infoworld *newspapers, Video Initiative, and the DataCast proposal for broadcast-based paperless electronic newspapers utilizing personal computers. He was the founding host of the PBS* Computer Chronicles *series, founding editor of* Dr. Dobb's Journal, *and founding president of the Microcomputer Industry Trade Association.*

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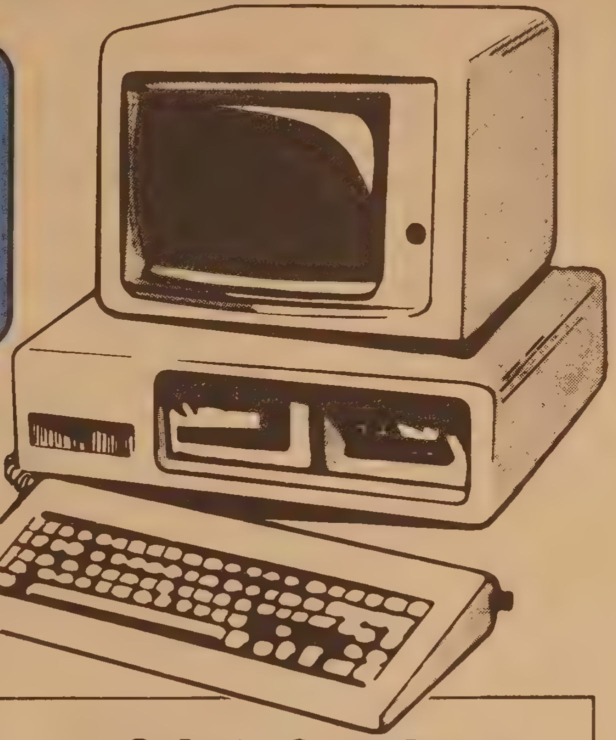

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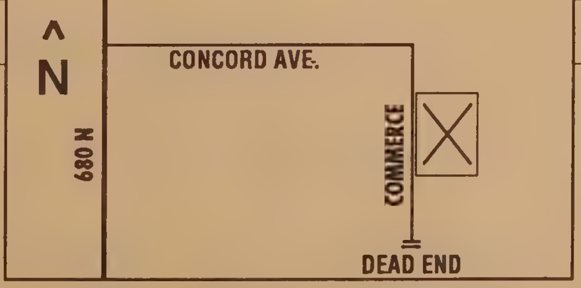

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ren's article would have one believe, a plot proposed by the union to prevent strikebreaking. Many school districts today, despite Warren's glowing account of the pay and working conditions of teachers, must fill its vacancies with long-term substitutes. Honig wanted to make sure that those substitutes had passed the CBEST. Honig wanted to close all potential loopholes that would permit what he termed "unqualified" persons from entering the teaching profession.

Most teachers, both union and non-union, consider the test demeaning. The blame for the CBEST test can be found in those colleges and universities that allowed their academic standards to be ruined by corrupt athletics programs. Some individuals, who were products of those programs, gained degrees and teaching credentials and proved to be virtually illiterate. It had nothing to do with teachers' unions and it had everything to do with Alumni Associations and wealthy sports boosters with warped sets of values. It remains true today all across America that more people care about what happens at the Friday night football and basketball game than what happens five days a week in the classroom.

The CBEST examination is administered and regularly scheduled by Educational Testing Service in the same way as the SAT and the GRE. Once the CBEST has been taken, it takes four weeks to get the results. These are the same ground rules that apply to the SAT and the GRE. A passing score on the CBEST examination is required of *all* new candidates for all educational certification in the public schools (12th grade and below).

Now that the Los Angeles strike was quickly settled, isn't it curious that there was no surplus of college-educated people who wanted to take up his challenge? He might wonder why.

In the Los Angeles Unified School District in the past year, one female seventh-grade teacher was stabbed in the back and had to be hospitalized for five days in intensive care. A highly experienced and well-regarded high school teacher was shot to death. A third teacher had to grapple and disarm a ninth-grade student who had brought a loaded .357 Magnum to school. A woman substitute in an inner-city junior high school had her eye poked out in the classroom. I have listened to other women who told me horror stories of assaults in the classroom. Hardly a week goes by that doesn't include incidents of gunplay among the students surrounding inner city schools in Los Angeles. The Los Angeles Unified School District has armed, sworn police officers following school buses in squad cars to and from school. One school, located next to a housing project, had to erect a nine-foot concrete fence to prevent stray bullets from hitting elementary school children at recess.

When the United Teachers of Los Angeles called their strike, which had been deliberately provoked by Superintendent Leonard Britton, and what a mistake he made, the number of striking teachers exceeded the total union membership by at least 1,000 teachers. Mr. Warren might be mad as hell, but the Los Angeles teachers are under siege and are not much impressed with blowhards back on the home front who think they are experts on public education.

Mr. Warren can blame the teachers' union for poor education in the schools if he wants, just as he can believe that the earth is flat. He can use a "by the numbers" analysis of the pay and working conditions of teachers that very conveniently excludes unpaid weekends spent correcting papers, unpaid summers preparing lessons, and in fact does not compensate most of the time that goes into teaching. Mr. Warren ignores [the fact] that teachers are required to work for free for an entire year before being admitted to the profession.

With all the supposedly great working conditions of teachers, Mr. Warren cannot explain why fewer than 700 people answered the call to replace 20,000+ striking teachers in Los Angeles. After all, the money offered to strike breakers was 67% higher than for normal substitute teaching. There are certainly more than 700 certificated teachers available to work as strike breakers in Los Angeles. Maybe they know something Mr. Warren does not.

In fact, since Mr. Warren is so badly informed about public education in California, I am going to openly challenge him to follow his own advice. In the Old West spirit of "put up or shut up," Mr. Warren, by all means, do follow your own advice. Take the CBEST examination yourself. I hope you pass it. If you do, I certainly hope that you apply for a job as a substitute teacher in an urban school district. Don't wait for a strike! Do it now! You, as a new teacher, will be assigned to an inner city junior high school. Volunteer for the worst junior high in your city. That might make you eligible for what LA teachers sardonically refer to as "combat pay." Sign up for English or "Reading." Those classes will provide you with the opportunity to prove that you can survive on the "cutting edge" of the greatest challenge and opportunity in American education.

Even if you turn out to be a lousy teacher, that's all right. Not to worry. Right now, we do not have enough good teachers to go around. Soon, there won't be enough bad teachers to fill the classrooms either. Be prepared to accept all of the blame for what goes wrong in the school system, however, especially if you find that you need to file an employee grievance and—oh, horror of horrors—find it necessary to join the teachers' union.

Take your own advice. Go ahead and do it. If you are not willing to do it, then you are just another phony blowhard who, in the manner of a dog, thinks that public school teachers are your personal fire hydrant. Most persons who talk about "Realizable Fantasies" do not have what it takes.

I doubt that Mr. Warren will follow his own advice; few if any businesses or talented individuals will take him up on his "community responsibility leave."

The only reason I took the time and trouble to write this is that Mr. Warren has an impressive list of credentials. Too bad he doesn't stick to subjects he knows something about.

Richard Rollo
Montebello

Jim Warren: The bio following my columns leaves out some of my "impressive credentials": I also hold lifetime teaching credentials in California and Texas (math & I.A.). Thus, like other experienced older teachers, I can teach without having to pass CBEST.

I was a full-time teacher, 1957-1967—earning $2,987-$7,000 (per year, not per month). Back then, our contracts didn't specify how many hours we were to teach per year, and weekend/evening grading and summer lesson planning was just part of our professional responsibility. I spent several more years as General Secretary of the Midpeninsula Free University (unpaid; earning income as a part-time biomedical programmer).

I also taught in a massive, bureaucratic urban district, and in an inner-city ghetto school where I took switchblades away from gang members, and broke up knife fights in the schoolyard. (I fully accept that things are much worse now in some schools. However, "Blackboard Jungle" was filmed when I was in high school; today's schools have no monopoly on school violence.)

Also, I am in my fourth year as Trustee of a $50-million county-wide community college district.

Finally, I reiterate what I said in May: Most teachers range between competent and outstanding—and should be supported as such, for their business is our future. Incompetent teachers must no longer be tolerated, for their failures harm our future and bring disrepute to their collegues.

***Errors Corrected:** Re CBEST exams—required for regular or emergency teaching credentials: It appears you are correct and I was wrong. I accept that teacher unions originally opposed competency testing.*

Further, the administrator who told me they were prohibited from scheduling CBEST tests in conjunction with teacher strikes has been unable to verify this to me.

Though I share Mr. Rollo's lack of enthusiasm for "athletic supporters," I cannot help but question whether "the blame for the CBEST test...had everything to do with Alumni Associations and wealthy sports boosters." Please send verification.

However, Mr. Rollo has not refuted my other points:

***Harming Students in Teacher Strikes Is Intolerable:** Leaving young children unsupervised by unannounced mass teacher absences, and withholding gradebooks, grades, and college-entrance testing from students and graduating seniors are irresponsible, dangerous union pressure tactics that should not be tolerated.*

Until such behavior is prohibited by law, competent citizens should become qualified to serve as substitutes for such irresponsible "teachers," and employers should grant "community responsibility leave" for such citizenship.

***Parents/Students Should Have Choice:** The taxpayers who pay for educational services should insist that parents and students be permitted to choose their service providers from among available schools and teachers—public or private—that meet state requirements for curriculum and economic and ethnic diversity.*

Some results: Bad schools would probably close—and they should. (Paying teachers more money to remain in dangerous schools is no solution.)

Incompetent teachers would have fewer students upon whom to inflict their educational harm. They would either be fired or the competent faculty would have to agree to support these nonproducers—as is now required under union-supported tenure laws.

***Tenure Protects The Incompetent:** I had no use for tenure when I taught; I have no use for it and the costly incompetents who claim its protection now that I'm paying for it.*

Its mandate by law is bad legislation; teaching is too important to offer job security for nonproducers and incompetents.

***Teachers Should Control Schools:** Physicians hire office managers, but it is the physicians who are (properly) held accountable for their practice, and they control how their offices operate.*

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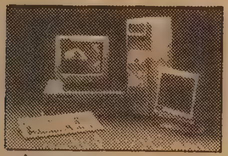

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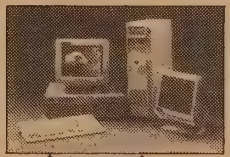

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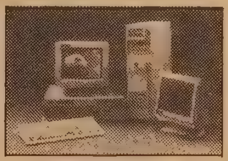

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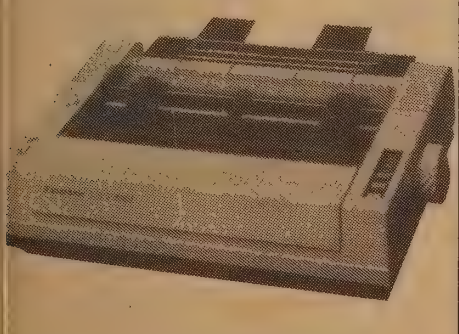

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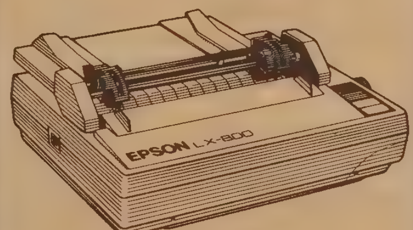

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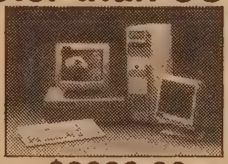

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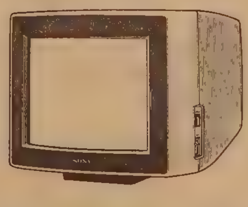

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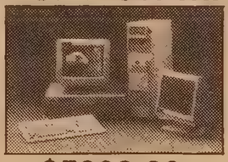

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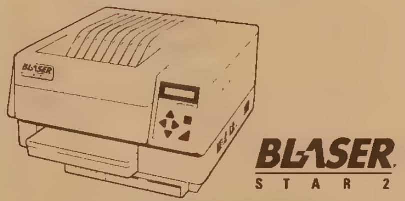

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held accountable for the functioning of their practice, and it is the senior attorneys who oversee and control how their offices function.

Similarly, teachers should control and oversee their schools—as they do their classrooms—for they are the ones who know best what is needed for quality education. Currently, this is possible only in private schools, and occurs in most of the best ones. It should be the case in all schools.

But with this appropriate authority over their schools must also come the responsibility for quality education. And I propose that a good way to assure responsible performance is to allow students and parents to select the school and teacher(s) that receive the education funds ("vouchers") expended on their behalf.

For Schools, Small Is Beautiful: *The smaller the school (above a minimum essential size), the more responsive it usually is to its clients—the students and their parents. Huge districts (e.g., LAUSD) too often have massive bureaucratic overhead and casual disregard for individual students, parents, and teachers.*

Under a voucher system, the power would return to the individual teacher and school. These huge districts would either become responsive to their "customers" at each local school site—or they would become no more than landlords renting their schools to teacher-groups who serve each school's clients.

What I propose is an imperfect system. But I say that it is far better than the mess we now have. This conclusion comes from ten years as a teacher, plus a third of a decade at the other end (notice I didn't say top end) as a public school Trustee, plus ten years of success (in computing) based on being highly responsive to a rapidly-changing client base and consumer needs.

I did volunteer to teach in a nearby high school district—for $1 per day—when its teacher union threatened to strike. But, the strike was averted when Trustees allowed the unionized majority to force non-union teachers to pay fees to the union to keep their jobs—settling the "educational" issue that prompted the teachers' strike threat.

A Striking LA Teacher Speaks

Thanks for your 5/29/89 editorial in *MicroTimes.* It's reassuring to have concern for education showing up in unlikely places. I share many of your views. The policy of giving megabucks to public education (especially after passage of Prop. 98) should be called into question.

As welcome as I felt your message was, I believe your focus was too narrow. I'm one of the bogeymen, you see. Along with about 21,000 of my colleagues, I recently went on strike against the Los Angeles Unified School District.

Any doubts I had about the strike's justification were put to rest on the first day. I went to a rally and met up with teachers who, like myself, had put in many unpaid hours over the years working on special programs for the students.

The most dedicated, innovative teachers were not crossing picket lines. Who went to work during the strike? The "factory worker" types you mentioned in your piece—teachers known for an assembly-line approach to learning, dispatching worksheets and dittos in a mechanical way. Who else went to work? The quasi-administrators (coordinators, administrative assistants, "specialists") who are carried on the employment rolls as teachers but who never teach. Class sizes could be immediately reduced if these monitors and paperwork generators would drag their pompous behinds into classrooms and teach kids.

Much of what you said about teacher unions is true. Frustration and resentment among LA teachers had built up for so long, however, that there was no other way to say "no" to a distant, highly paid, self-serving administrative behemoth but to strike. That's why a large percentage of non-union teachers walked out as well.

State funding made available after the passage of Prop. 98 was used to settle the L.A. teachers' strike. Ironically, I voted against it last November. The accountability sections, as I read them, didn't provide for enforcement against an ineffective school district. Even if they did, the many ways a district can make itself look good when state auditors or peer reviewers come around would render enforcement measures meaningless.

I wholeheartedly endorse a plan to provide California parents with vouchers good for tuition at the private or public school of their choice. There's not a lot of support for this right now, but it's still a worthwhile idea—hopefully a realizable fantasy.

I'm leaving LAUSD at the end of June to take care of my own three kids and finish a Masters while my wife goes back to work. When next I seek a teaching position, I'm going to check out the private and parochial schools first. Teachers make less money there, it's true, but the commitment to excellence seems to be much stronger.

Ralph Goldstein
Altadena

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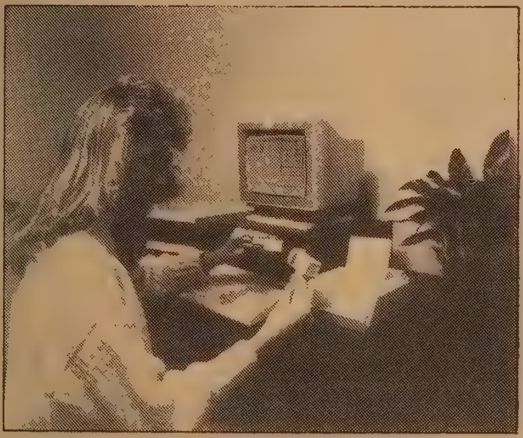

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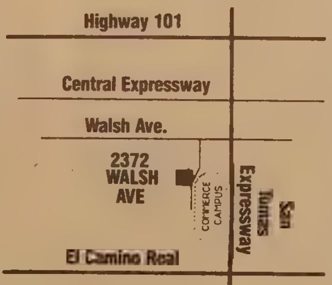

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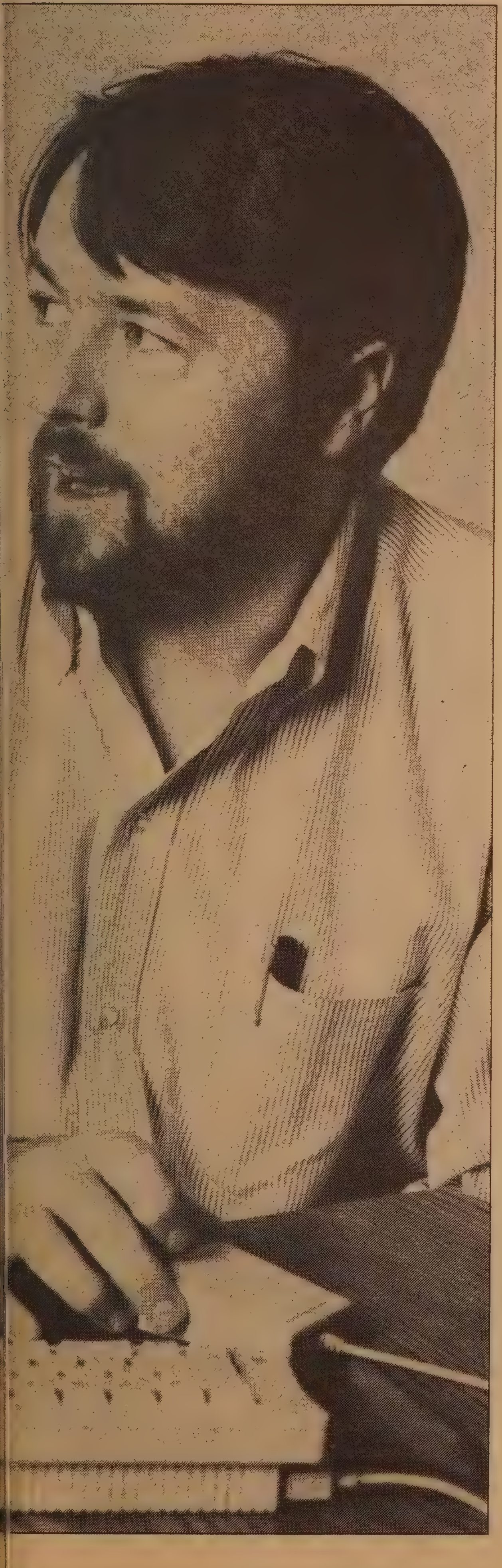

(Editor's note: One day in 1985, probably about the time I swiped the Mac off of our distribution manager's desk and never looked back, I attended my first BMUG meeting. A fairly momentous one, as it happened.

A few weeks earlier, Apple had announced AppleTalk, a system for networking Macintoshes and LaserWriters. It was relatively easy to set up and revolutionary in that it could be implemented for the amazingly low price of $50 per connection.

At the BMUG meeting, president and founder Reese Jones, then a graduate student at Cal, gleefully announced BMUG's latest technological triumph, BMUGnet. BMUGnet matched AppleTalk's functionality; it was, however, enormously cheaper than AppleTalk, since, with hackerish zeal and disdain for expensive proprietary solutions, the wizards of BMUG had built the whole thing from standard, off-the-shelf phone company parts.

BMUGnet was eventually renamed PhoneNET, and it became a vital element of many vendors' Macintosh networking systems. And from these origins grew Farallon Computing, currently the purveyor not only of PhoneNET, but of a wide range of building blocks for the multimedia, multi-vendor networks of the future.

Farallon's come a long way in its brief existence, and become a key player in the world of Mac networks, local and wide area. We sent Steve Guttman to the company's Berkeley headquarters, where he met with Jones and discussed the company's current product line and goals for the future.—Mary Eisenhart*)*

BY STEVE GUTTMAN

"Network plumbing" doesn't necessarily conjure up visions of state-of-the-art communications technologies and high speed computers. But perhaps it should. It's the term Reese Jones, president of Farallon Computing, uses to describe his company's particular affection for building tools that help create and maintain AppleTalk networks. Those in the Macintosh community needing their network pipes "cleaned or soldered" often use Farallon's products and services. "It's kind of grunge work," says Jones. "And we're quite happy to do it."

Most of us know Farallon by the trademark PhoneNET connector hanging off the back of our Macs. You know, the little cream colored box with the Mac connector on one end and a telephone jack plugged into the other. Most Mac aficionados who are networked to laser printers and file servers pretty much take connectivity for granted. "Oh yeah. You just plug that thing into the back of your Mac, and then you're all connected."

But those who've worked on PC networks and have experienced the "daily crashes" know that network integrity is a privilege—not a right. Mac programmers have always had to work extra hard to build applications that were simple and intuitive; this ease of use is taken somewhat for granted by users. The ability to easily construct hassle-free Macintosh networks with telephone wire is a tribute to Farallon's ability to protect users from the inherent complexity of network technology.

Jones was studying for his doctorate in biophysics at UC Berkeley in 1984 when he became enamored with the Macintosh. While doing graduate work at Lawrence Berkeley Labs, he began experimenting with connecting the Mac to different computers and lab instruments, and later started BMUG (now, the world's largest Macintosh-oriented user's group) as a forum for exchanging ideas about using the Macintosh for communicating with these other devices.

Jones invented the PhoneNET system while trying to figure out how to connect his LaserWriter to Macintoshes in different rooms of his house. The connectors use ordinary twisted-pair telephone wire and make use of the two wires in normal telephone wiring that are not used by the phone company (telephones only use two wires of the four-wire set)—an accomplishment that was believed to be impossible at the time. Over 700,000 PhoneNET connectors have been sold to date, accounting for over half of all networked Macintoshes (according to IDC).

Farallon can be found about six blocks from the UC Berkeley campus, at the intersection of two one-way streets—which is perhaps fitting, given the single-minded direction Farallon has been moving in since its 1986 founding. It has doggedly widened its market niche into a well-defined ledge, and is turning that ledge into a whole platform for a family of networking products. Along with PhoneNET, Farallon also sells various and sundry network management hardware and software. In 1988, Farallon acquired WOS Data Systems of Lawrence, Kansas—developers of *Timbuktu* and *Timbuktu/Remote*, software which allows a user to view the screen of or take control of another Macintosh either on a network or via modem. The *Timbuktu* products can be used for remote support, training, and collaborative computing—where two or more people work on one application screen at the same time.

Farallon is also testing the multimedia waters with its MacRecorder and ScreenRecorder products. MacRecorder is a hardware/software combination that includes a microphone, and allows users to digitize, edit, and play back voice with the Macintosh. In combination with *ScreenRecorder*, software THAT can save and play back screen ses-

> Networks have historically been this macho, complicated, very difficult thing to deal with, and we're trying to de-mystify that. You know, "It's like a telephone—you plug it together. If you have trouble, give us a call. We'll help you."

sions, users can create voice-annotated demonstrations that can be played from within *HyperCard*. MacRecorder is also used to record sound for use with *VideoWorks* presentations.

Interviewed recently at the Farallon office, Jones offered an inside view of the current and future directions for Mac and multivendor networks.

Could you talk a little bit about the origins of the company? In particular, what challenges have you and the company faced in becoming a viable, commercial enterprise?

Farallon's about three years old now. The way it got started was—when I started BMUG, the main thing I was doing at the time was using the Macintosh to connect to a Vax computer and a PDP and a couple of IBM laboratory instruments and things of this nature. At the time that the Macintosh first came out, the general press and the general dogma was that it was a terrible machine—it was very poor at connecting to other things, it had no communications capabilities, etc., etc. And here I was using the Macintosh to connect with all these other computers, as were a lot of other people at Lawrence Berkeley Labs and so forth.

My interest in getting BMUG rolling was as a forum to exchange ideas about using the Macintosh to communicate with these other things, and all the other things you could do with this computer, sort of exchanging ideas about how to do this. One of the things we used to do at BMUG meetings early on was to have make-your-own-cable night—this is how you make a cable to attach to an Osborne, and a PDP, and to an IBM PC, and other things like this. And this is the software you use to transfer back and forth. And there were little programs on the Vax and little programs on the Macintosh to send things back and forth.

So in the BMUG newsletter I would write these articles about how you attach to a Vax, how you attach to a PC, how you transfer files back and forth, how you convert the files from one form to another—that kind of thing. And then, in the second year of BMUG, Apple came out with the LaserWriter and AppleTalk.

This was '85?

Eighty-five, yeah. I got one of the first LaserWriters that came out. BMUG was operating in one bedroom in my house, and my office was in the other bedroom in my house, and what I wanted to do was connect the computers in the BMUG office to the LaserWriter that was in my office. I started experimenting around with different ways to do that, and came up with "Well, why not use the telephone wire that already goes to both those places to do that?"

I started experimenting around with different circuits that allowed you to run the LocalTalk protocol from the one place through the telephone wire to the other. The big problem is how to isolate the computers from the telephone wires, and how do you protect the computers, and how do you deal with the termination of the signals in the wiring—these kinds of things. I wrote an article in the BMUG newsletter about how you do this—connecting these things together over the telephone wire. The engineering dogma at the time was "You can't do that, it's impossible; telephone wires can't support data rates that fast," etc., etc., where, obviously, it was working.

And so I wrote some articles about it that generated a lot of interest. And people said, "Well, why not make kits for solder-it-together-yourself cable night?" About that time an interesting CAD program for the Macintosh came out, and so we experimented around with these kits. Initially it was a baggie with all the parts you needed and a page of instructions on how to solder it together and how to use it, and then the articles from the BMUG newsletter about how to build networks out of these things.

That got a lot of interest in the academic and hacker community where people would buy these kits and put them together and stuff. And then in the early part of '86, companies started calling up saying, "Well, we want a thousand of these, all soldered together to include with our product." Companies like QMS, which makes printers, and TOPS—they were making software and they wanted to have this other way of connecting things together. So they called up and said, "Well, we like these kits, but as a commercial product to sell with our products."

So, it was a grass-roots sort of thing?

Yeah.

At that time, it became clear that, since BMUG is a non-profit institution, it didn't make sense to do it as that. So, I started Farallon to deal with the business aspects of making this a proper commercial product—refining the design until it was something that could be properly commercially sold, and getting the manufacturing started and that sort of thing.

In the first year Farallon started out with connectors and wiring and that kind of thing. But as people started to build larger and larger networks, they wanted to have network management software, and they wanted to know who was on the net, and where the traffic loading was, and they were trying to do all these things very simply. So we got involved very early on with things that have become in vogue very recently, such as network management. We just developed the tools. When the customer said, "Well, we really need something that does such and such"—we'd make it.

And this evolved into the whole PhoneNET system, which originally started out with trying to say, "Well, they do it this way with telephones. Why not try and take advantage of that for data networks or LANs?" We're continuing to follow that along through wiring closets and metropolitan distribution wiring and things of this nature—"How do you connect these two buildings together within a city? How do you connect these two cities together?" That type of thing, following telephone standards, or the way that they do it in telephones, up into larger and larger scale.

That has a significant advantage in that architects, wiring contractors, building designers, and telephone installers all know how to deal with PhoneNET, where they don't know what ThickNet, or ThinNet, or these other things are. Buildings aren't designed to deal with bus-based systems. They're designed to deal with star topology, telephone wire networks. And so by keeping the design following telephone-like standards for constructing the network, it makes it much easier to install into the average building. There's many more people wandering around who intrinsically understand how to put it together and can install it. So that's sort of been a focus on the design side.

Then on the customer side, just from our experience in BMUG—which is a consumer advocacy organization—we spent all our time worrying about what all the companies in the industry were doing wrong from the point of view of the customer, taking that to heart a bit in how we interact with customers in Farallon. Particularly with LANS, [we emphasize] areas like tech support and customer service and warranties and product reliability and simplicity/ease of use, as opposed to "mystical" performance or macho networking. Our focus has been more towards the consumer side of that—networks have historically been this macho, complicated, very difficult thing to deal with and we're trying to de-mystify that. You know, "It's like a telephone—you plug it together, if you have trouble, give us a call. We'll help you"—that kind of approach.

It turns out that customers like that, as you can imagine. And it has helped us in terms of—a lot of our early customers were people who had been involved with higher end networking in the past and had very bad experiences. You know, "It was too complicated. It was too unreliable. It really didn't work very well." We were sort of a second try for some of these customers. And you know our stuff is very simple to deal with, very reliable, easy to set up, easy to maintain. And so they like it.

Is your ability to do that a function of the design of the Macintosh, as opposed to the PC where networking is not built in, there are few standards, and things break all the time?

Well, the Macintosh marketplace—people who use Macintoshes are much less tolerant of minor quirks and things in the software than are people who use PCs. It's constantly amazing to me that companies who ship things for PCs that don't work, they go, "Ah, who cares." The customers don't seem to. They're much more tolerant than in the Macin-

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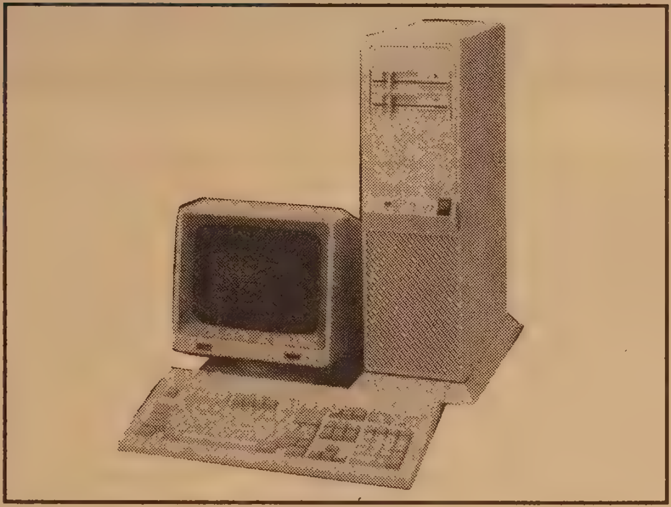

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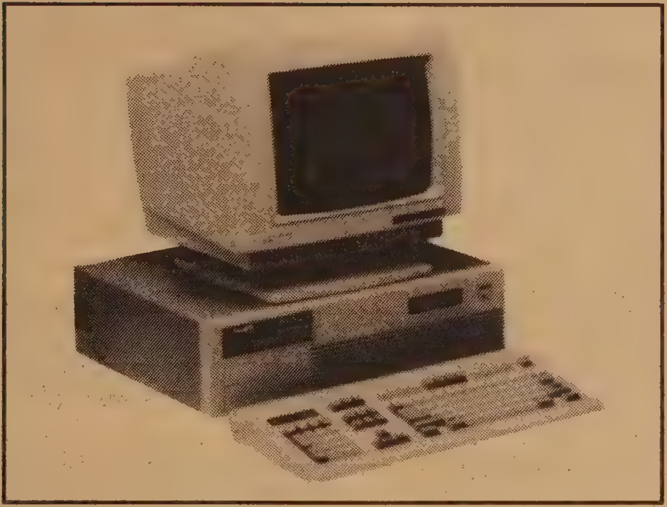

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tosh world, where with the Macintosh the customer will get furious if your icon has jaggies....It's quite a contrast, and I think that's one of the reasons why the Macintosh is being successful, is that the standards of quality and acceptability are much higher than they are for most MS-DOS products.

I'm not sure it's the customers are more tolerant, it's just that they're used to companies not being able to foresee every situation, what with five different video standards and several different network standards. It's sort of like being beaten down slowly.

If you want to do multimedia electronic mail, well, you have to be able to have audio and high resolution animation and be talking on the network—all simultaneously, and have somewhat of a standard. So there, you need a fairly high level of functionality in the machine that isn't there in the PC.

People always ask us, "Well, are you going to do PC software?" Or, "Are you going to do PC products?" or whatever. And the question is, "What is a PC?" Is it DOS 1, 2, 3, 4? *Windows*? EGA, CGA, VGA? *Presentation Manager*? OS/2? Who knows?! You don't know what's there. So if you're going to do, say, even an email system that crosses over to PCs, since you don't know what it's going to be that you're sending this message to, you're almost forced to degrade it to the lowest common denominator that you send to. It's the same problem in UNIX, in that there's no consistent imaging model; there's no consistent display type of system. At least most UNIX systems have networking built in—that's a start. But almost no UNIX computers have sound built in. And so you know you can't send voice because it just takes up disk space.

What kind of applications have people found for MacRecorder, besides making noises for SoundMaster?

Most of the things that people are actually shipping are these training type of applications...

The ScreenRecorder/MacRecorder combos?

Right. And we have more that are being done in that general area. But the new stuff we're doing has to do more with voice-mail, voice annotated documents, voice messaging—that type of thing.

I'm curious—do you see the Mac as some sort of vehicle that will take the place of voice mail, or as some kind of substitute for Centrex services?

No, as a complement to them. The whole focus of our company is to work on applying telephone-like thinking to computers. And if you think about what it is people use telephones for, they use it for talking to another person or talking to another person in non-real time—which is voice mail. With the computer, there is real time video teleconferencing, and that's essentially what *Timbuktu* is all about. Then there's store-and-forward—in the telephone it's voice mail: you store the voice, and they hear it later. But in the computer, you can have a much richer set of data, which is store-and-forward text, or images, or voice, or movie sequences—that's essentially multimedia mail.

Our focus is—after you have standardized mail engines, like X.400 and so forth—well, then, what kinds of software applications would you want on top of that besides just ASCII—sending a memo around. The type of things we're working on is, "How do you use the computer to talk to other people?" As opposed to, "How do you use the computer to talk to that 3090 in the basement?" When people talk to each other they prefer to use voice—thus all of our emphasis on voice and sound. And the way that people want to talk to each other is either in real time, in which case they're talking on the telephone and interacting live on the screen, or store-and-forward, in which case you would talk to the computer, but the other person would hear it later.

The MacRecorder product is sort of an initial product in the marketplace that deals with getting the sound in the computer, manipulating it, editing it—that kind of thing. There's three basic parts to it.

There's the hardware that gets the sound in. In other computers like the NeXT machine, you get the sound in and out without any additional hardware. In the case of the Macintosh, right now the initial hardware implementation of the MacRecorder is to make it simple, easy, cheap to get the sound in. But later, the way you may be getting the sound into the computer may be a telephone, or it may be an ISDN card. So the hardware may migrate along its own path.

Then there's an editor. You wouldn't consider doing an electronic mail system for ASCII if you couldn't edit the things you wrote after you typed them, and that's what *SoundEdit* is about. It's essentially a word processor for speech. It allows you to manipulate the speech message, or whatever it is, in the time domain. So it's an example of a time-domain editor. We're doing a lot of things with time domain editors—editors that deal with manipulating things that occur over time. Sound, or animation, or video—things of this nature.

Do you think people want to be able to use MacRecorder and have the sound come out to the people they're talking to at the other end as they speak—in real time?

No, because most everybody who has a computer also has a telephone. There's almost no one who doesn't—who has just a computer with no telephone. So we could take the sound, put it into the data channel, send it over the LAN, and then put it back as sound. But since you've already got a telephone, and a LAN, why not use the LAN for data and the telephone for the voice in a conference?. The only time that it makes sense to store the voice in the computer is if it's to be combined with something and forwarded on later. So, for the real-time conferencing, our focus is to talk on the telephone and conference either on the LAN, or on the modem connection.

The thing that confuses people about what we do is—they look at products that we're shipping today and they go, "Well, I don't understand. What does MacRecorder have to do with network plumbing anyway?" Essentially what our company is working on overall, is that we're trying to make the ideal front-end application for ISDN—which is a voice and data, telephone environment. And in ISDN you have two channels coming to your computer—one for voice and one for data; or both for voice; or both for data. We're trying to deal with the transition from analog phones plus LANs into ISDN.

I get that connection. I'm just not sure that I see how everything comes together into this ideal voice/network application. I see how MacRecorder and ScreenRecorder kind-of relate to each other...

Well, first of all, just to give you a bit of a feel for this....*PhoneEdit* is designed implicitly as a telephone and computer sharing the same cable going to the desk. The way the voice and the data interact at this point is, you have a PBX, which has extensions to people's desks and outside lines; modern ones have voicemail servers. And the LAN—the same thing, particularly with StarControllers and such. So you have extensions to people's desks—outside lines—which is *Timbuktu/Remote* or wide area networks, and email servers. We're interested in the coupling between the phone and the computer at this level, and the servers at this level. And then the LAN can be further subdivided into—this is the LocalTalk speed stuff, and the Ethernet speed stuff, and you can mix and match.

The other important thing about this is that PhoneNET, as wired with StarControllers, is exactly plug-swap compatible with ISDN. So that if you start out with the telephone and the computer wired to StarControllers, you can substitute ISDN terminal adapters—either a box on the wall, or built into the phone, or a card in the computer. The software is designed to work in this environment first, and then in the LAN environment second.

The way these things all fit together is that you're talking to another person independent of time and location. Same-time/same-place, that's desktop presentations, essentially. That's what we're doing now. There's stuff on the screen, but most of the content is verbal.

There's same-time/different-place—again, you're talking on the telephone and you're interacting on the screen, and most of the content is verbal.

We've talked to a lot of places that have these very fancy video teleconferencing conference rooms and so forth, with 13 cameras up in the ceiling and so on and so on. And after they've sort of gotten over the newness of it and used it for about six months, When you want a new standard of performance and price . . .

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the way they actually use it on a day-to-day basis is they have one camera pointed at the screen and they all talk anonymously on one speakerphone. So, even though they have this very fancy setup, they prefer to just show the data to all the sites and talk. Because people would rather not appear themselves on the television screen. They would rather have the attention focused on the data, or what they're trying to show people, and their voice. Essentially that's what *Timbuktu* and the telephone are about.

If people instead used those fancy teleconferencing setups to pan across the room and photograph people as they were talking, would that then imply that your next step would be to synthesize some kind of video program?

Yes. We're quite interested in video. Video is another time-domain thing. There need to be editors for that. But you'll see things like that coming along.

Right now, to do full-motion video teleconferencing between sites, you have to do expensive compression on either side, and it requires a faster channel than is economically feasible for most places to afford. It's okay for Fortune 50 companies who want to link their 12 corporate offices, but it's not the sort of thing for the bulk of the world.

It's like the videophones that, in the early '70s, people predicted would be widespread ten years later.

Those things are starting to come into play. I don't know if you've seen these Matsushita and Sony [still-video phones] and so forth. There's one standard that's a little bit faster, 384 K-bit— that's coming. But to do full-motion color video from site to site requires essentially a T1 link. A T1 link costs $18,000 a month to go from any point to any other point. It's not the kind of thing you would set up for casual use. So there's the limitation of technology that's holding that stuff back.

But the other thing is that people don't want to appear in pictures. The social thing is what keeps it from happening, more than the technical, for this type of thing.

The Mac got its start as a sort of "outlaw" machine, and Apple still obviously cultivates this kind of image despite the fact that they're selling strongly into Fortune-level companies. How do you perceive that Apple has changed over the years? My perception is that a lot people are getting a little disgruntled with Apple's service, its high prices, etc.

Well, they're certainly improving the machines. That's the most important thing that they should do. People don't criticize Mercedes for having high prices, and they buy them anyway. They just have a particular positioning in the marketplace, where they are not trying to take over the marketplace, they're trying to be the best in the marketplace that they've chosen to stake out for themselves.

And keeping the high prices—well, yeah, I guess that makes it a little higher-priced machine. But basically the Macintosh is software that happens to be packaged in a box that is a computer.

Most of the value in the Macintosh has nothing to do with hardware—it's all the software. Apple is really a software company that masquerades as a hardware company, but they have a clever scheme of packaging their software in a way that it can't be pirated. As a third party to Apple in the marketplace, it's important to us that they keep the quality and consistency of their machines high. That's most important to us. It would be short-sighted and better for us if they dropped the price drastically, if there got to be way more of them out in the marketplace—it makes it a larger market. But in the long run, that's a bad strategy. It makes sense to say they're going to be focused and have a good quality thing and have a high standard that we can write to, as opposed to a large market, but a low standard.

I think their prospects are very good in that there's more Macintoshes out in the world than there are DOS machines that are capable of running OS/2 with Presentation Manager. To run that, you really need a 386 with at least four megs of RAM, with a large hard drive. And, you know, there's not that many DOS machines out there that have that capability.

So I think their prospects are very good, and to have add-ons to them is a good market. Our focus is a little bit different from those who do direct add-ons to the Macintosh, say, such as Radius, who basically does things that Apple has to do some day, but they do them today. Our focus is a little bit more on—how does that computer connect to other stuff?

On the plumbing side, that's the way we're doing things having to do with standards. So, the Ethernet, PhoneNET stuff is standard IEEE, 10 BASE T, telephone wire Ethernet standard. It's 802.3 standard so DEC equipment and Sun equipment and NeXT equipment and all these other things can easily run over that protocol.

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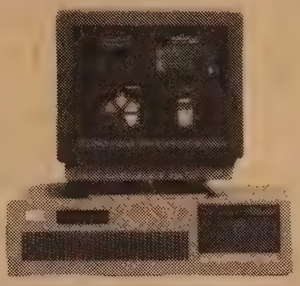

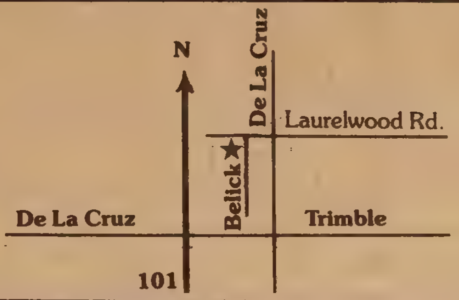

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Has that brought up any conflicts between you and them?

Not per se. Apple's a CPU company, and they have to have sort of everything, soup-to-nuts, because some types of customers want to buy all Apple.

But it takes a lot of work to do what we do. Network plumbing is kind of grunge work that a lot of people don't want to do, and we're quite happy to do it—it's our focus. And as long as Apple feels confident that we will make sure that the network plumbing works well, it sells more Macintoshes. So as long as we help Apple sell more Macintoshes, they'll continue to have a good relationship with us. They've been very supportive and helpful.

Can you talk about Apple's multimedia binge—what it means? Do you think Apple knows what it means?

Well, I think Apple is trying to highlight the differentiation of the Macintosh from other platforms, and one of the things the Macintosh does way better than anything else is multimedia. Trying to do some of the things that are quite straightforward on the Macintosh on another platform is very difficult. So I think that is a wise marketing move, to differentiate things in that way.

Our view of what's important about multimedia is different, I think, from mainstream Apple. Multimedia, in our company's view should be a little bit more low-end for more people—like more business applications. In multimedia you tend to get attracted to the sexiness of these really high-end types of applications where you need $10,000 in add-in cards and videodisk players and all this fancy animation stuff that's so impossible to use that there are maybe 50 people in the world who know how to use it. Our focus is on ease of use, or multimedia for lawyers, or accountants, or whatever, less on production value *a la* Lucasfilm or Disney or Warner. Although our products are useful in that area, our focus is on business applications for multimedia.

There's another assumption that multimedia means creating things to go on videotape, or onto TV, for that matter. Our feeling about multimedia is that you create something that is an electronic mail piece that never leaves the computer. It goes over the network like normal mail and it's watched on the other person's screen. That's multimedia.

I talked to a multimedia developer who went to Apple's recent conference and was really disappointed. He didn't feel that Apple really knew what multimedia was, or how to use it, and was very disappointed in the fact that Apple has a mini-company dedicated to multimedia, yet they had nothing to show at this conference.

"Multimedia" is like saying "computer." It's a vast and diverse area, and everybody's an expert.

Multimedia with videodisks, the stuff their Media Lab does, is very high-end stuff. And even if you have a really nice computer and a really nice videodisk and all this great software to coordinate it all together, it turns out that the work of creating multimedia is going out with the camera and collecting the material that you want to put on the thing. The technical aspects are 20% or less of the problem. So that's an area of multimedia that is much more dependent on good tools to help put it together than others.

There are a lot of people at Apple who do have the right view of what multimedia should be, as far as their positioning in it. But multimedia is not nearly so clear as to what it is as desktop publishing was.

And even that's still evolving.

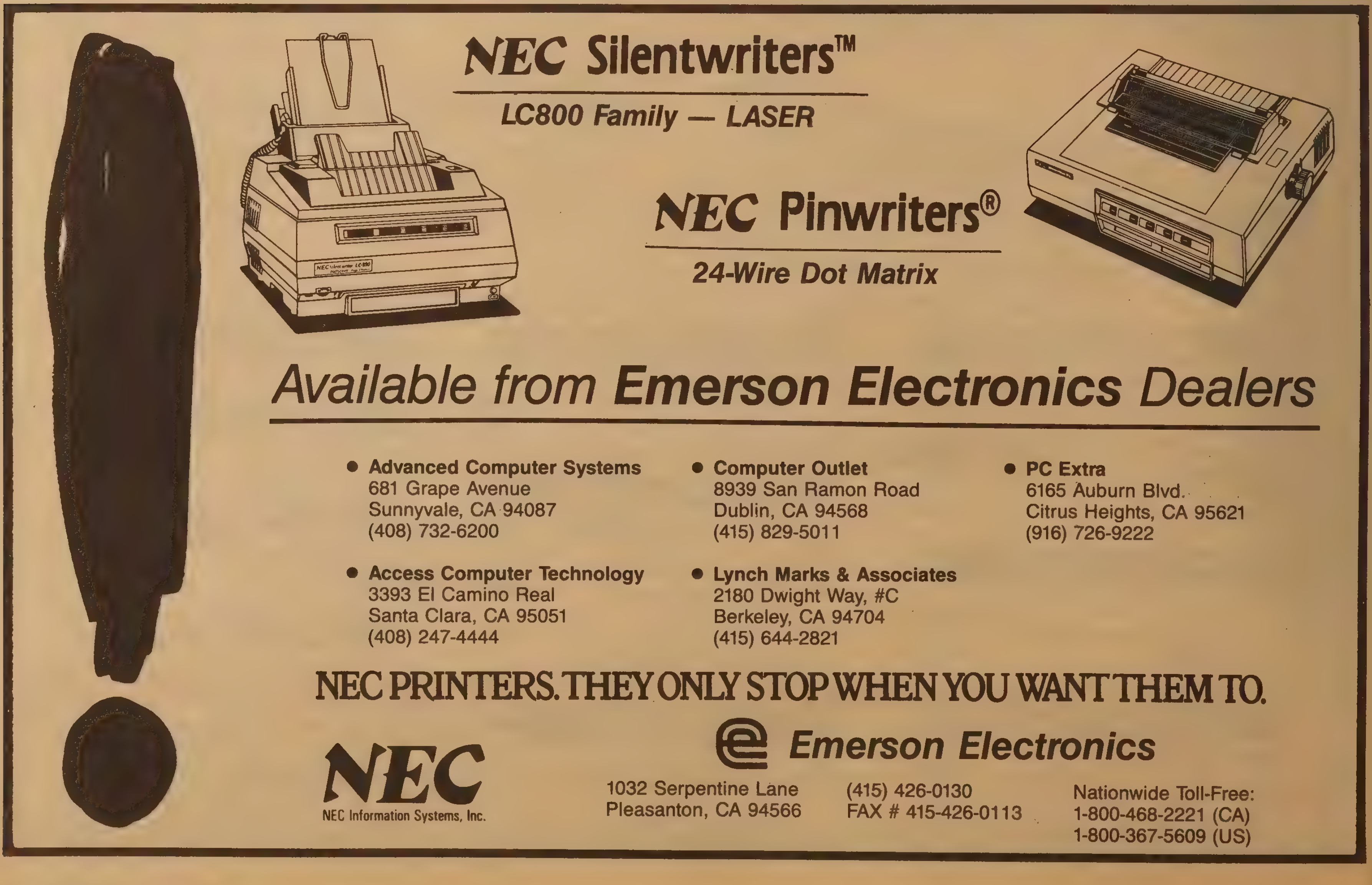
Our view of desktop publishing is that it should be mail. And it should never hit paper.

Tell me about the NeXT machine and why you're developing for it.

The reason we like that machine is because it has a high lowest common denominator, in that it has built-in networking, it has built-in sound, and it has a consistent, high resolution graphical interface imaging model. So if you want to do things like *Timbuktu*, or these movies that we're doing, or voice annotated documents and mail, you know that if you send that person a voice narrated movie, they'll have the right hardware, software, RAM and display to hear it and see it. And they'll have the networking built in, so they'll know how to send it.

So in that regard it's a very appealing machine to us. It's a good machine to be on a network along with some Macintoshes and maybe some high-level IBM-type machines, where the marketplace is shifting from being just focused on boxes that are unconnected to things to focused on systems where everything is connected together. And the person chooses what they want to have on their desk based on the features that it has for them.

Ideally, two years from now, you'll be able to choose what's on your desk—whether it be a NeXT machine, or a Sun, or an IBM, or a Macintosh. And they'll all be relatively transparently connected together and have some kind of interoperability at that level. The subtleties of the way you interact with the computer will be more what you choose the different box for. But they'll all have standard networking; they'll be able to interact mail-wise; hopefully they'll all have audio capabilities so you



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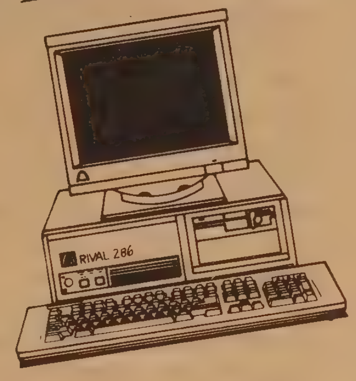

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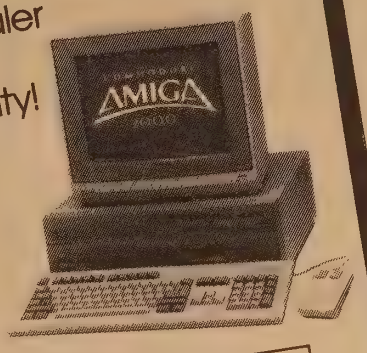

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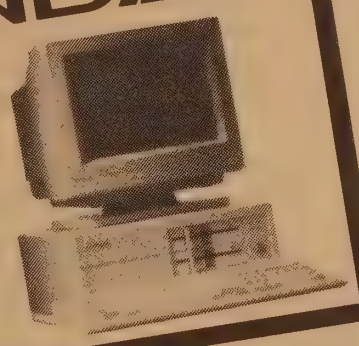

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can have voice mail going back and forth—multimedia mail, essentially. And hopefully, things will be a little bit more standardized.

The way companies usually work is that they will normally choose one type of personal computer to adopt...

That's the way they have worked in the past. But see, that's becoming less important. The focus is shifting—from our experience—into standardizing on how the networks are done. And what the person has on their desk could be a Macintosh or a high-end PC, or a Sun, or a NeXT. For example, in our company, what's on a person's desk—we have people with Suns, people with NeXT machines, people with various PCs—most of all of whom are in engineering where there are specialized programs that run on those machines. But then they're on the net. What's important is that the building be wired with a network that supports multiple machine types, and that's where things are shifting.

I think Businessland is aware of this shift and is following it a bit in that they're saying, "Well, we're going to focus on systems, and on connecting these things together, and the customer can choose whatever mix of workstations actually sit on their desks."

Will you be distributing things on floptical disks as well?

Since we intrinsically do things in a network environment, the way our software is typically used at a customer site is that they may have a multi-thousand node network, and they'll get one disk that they can, from their desks, distribute that to all the machines out there. The old way of distributing software is starting to change as networks get better, as they get standardized, as software starts to come on multiple disks.

A lot of people will say of the NeXT, "Oh, it's terrible—it doesn't have a floppy drive." But we don't necessarily see that as a problem, because the way that software will actually be sold is, the high-end type of dealer like Businessland will set up the whole thing—all the software loaded, configured and set up—back at their corporate center, which is on the network. Then they'll give it to the customer already configured, and they just turn it on.

But of more interest to us is CD-ROM-type drives, where the way a computer should come to you....This is where we're a little bit disappointed in Apple. What we would like to see out of Apple is a CD-ROM drive standard in the Macintosh. So you know that you can distribute something that has 500 Mb of storage, can be mass produced at very low cost with good reliability.

We would like to distribute all our products on CD-ROM and not on floppy drives of any sort. I mean, people don't write onto their master copies of their disks anyway, so it doesn't have to be on read/write media. What we would like to see—or what you should be able to do with ScreenRecorder/MacRecorder and those things—you should be able to get your computer, pull it out of the box, turn on the switch, and it should come on and say, verbally and with animation, "Welcome to this new Macintosh. Let me show you a few of the things you can do do with it. You can do spreadsheets—look how they work. You can do work processing—look how that's done. You can do desktop publishing..." and so on. And then it could say, "Would you like to learn more about any of these?" And you can tell it which ones you want to do. And that's all on the distribution disk—there's no paper documentation at all.

When the Macintosh first came out, they had that advertisement where they dropped the binders next to the IBM PC and it bounced. Now the Macintosh binders are pretty big. It would be nice to think about—well, you drop the CD-ROM disk next to whatever machine, and it doesn't bounce at all.

But by moving to fully narrated, fully animated, online help including tutorials—if you have that front-ended onto something like Microsoft *Excel*, instead of getting help and having some cryptic paragraph on such-and-such, you could have a little button there that says "Tutorial" that shows you how to make the graph instead of having to explain it to you. The only way you can do that economically is if the machines have CD-ROM drives built i, and are released as more-or-less standard equipment. And for a floptical drive, it's $80 for the raw media, where a CD-ROM is like $2. So there's just no comparison.

You started as a sort-of grassroots effort. Do you think it's still possible to grow a company that way?

Sure. Although it's hard to get into the distribution channels. I mean, the very hardest thing that we have done, or the thing that we have of most value, is our distribution channels. We work very hard to support them and maintain them, and it's very difficult to get that started. It's a painful process. But if you have a good thing at the right time, the distribution channels are hungry for good things at the right time, and they'll pick stuff up. ■

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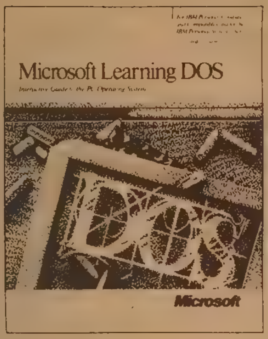

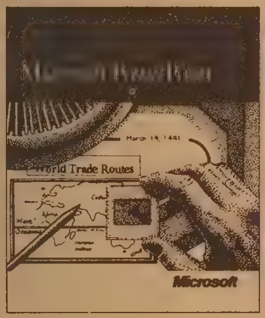

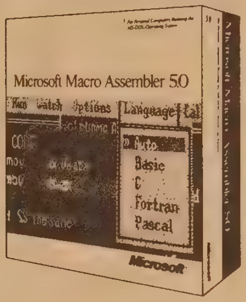

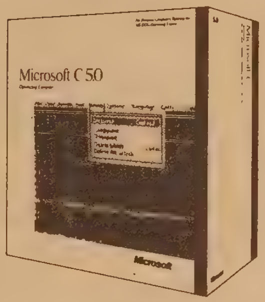

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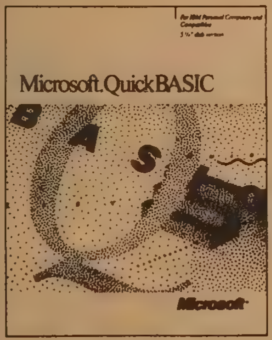

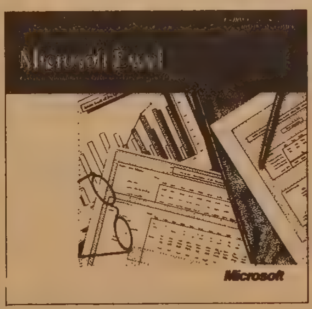

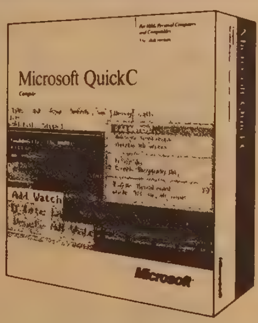

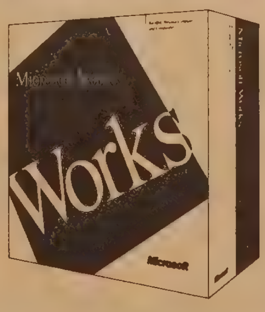

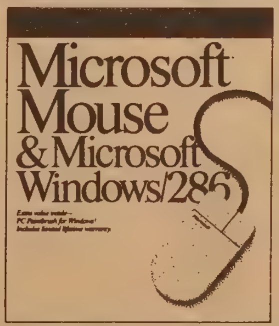

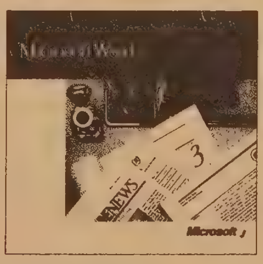

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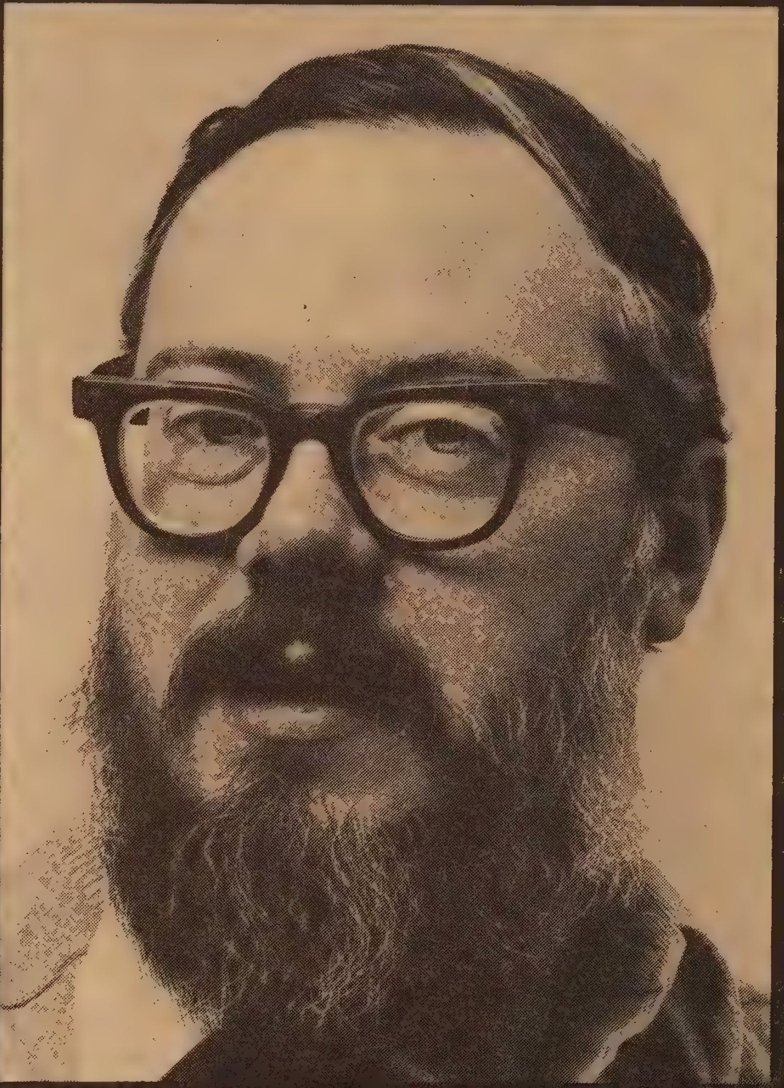
UNIX Meets Plan 9 From Bell Labs

An Interview With UNIX Co-Author Dennis Ritchie

By Bennett Falk and Mary Eisenhart

Photo courtesy of AT&T



Dennis Ritchie, co-author of UNIX, author of C, and one of the masterminds of Plan 9 From Bell Labs

Twenty years ago, in an obscure and garret-like corner of AT&T Bell Labs' New Jersey headquarters, a group of researchers devised an operating system for their own use. One of them was Dennis Ritchie, who'd worked in physics and applied mathematics at Harvard and had joined the Computer Science Research Center of Bell Labs in 1968.

Recalls Ritchie, "What we wanted to preserve was not just a good environment in which to do programming, but a system around which a fellowship could form. We knew from experience that the essence of communal computing, as supplied by remote-access, time-shared machines, is not just to type programs into a terminal instead of a keypunch, but to encourage close communication."

Prior to this project, the team had been involved in a massive operating system project that included AT&T, MIT, and General Electric and was known as Multics. In response to the relative simplicity of the new system they were working on, one of the team, Brian Kernighan, dubbed it UNIX.

Gradually UNIX made its way out of the research department and into applications, and today it's experiencing unprecedented popularity as affordable hardware capable of running it becomes available and users recognize its power.

Ritchie, in the intervening years, went on to write the C programming language, which was used in 1973 to rewrite the operating system. Today, he's a Distinguished Member of the Technical Staff at Bell Labs, where he's working on a new project, a distributed operating system auspiciously called Plan 9 after the sci-fi cult classic *Plan 9 From Outer Space*.

We recently had the opportunity to talk with Ritchie, and to discuss the origins of UNIX as well as his current work.

How did you and your colleagues come to develop UNIX? What were you trying to do and why?

(Laughs) Only a few years of history to go through...

To set some background, we're in a research group at Bell Laboratories, not a development organization. Therefore what we do is ordinarily not expected to immediately turn into any kind of product. It's supposed to be advancing the state of knowledge rather than deciding what the company will come out with next. Although of course in the long run the point is to improve the bottom line.

Specifically what happened was around the end of the '60s we had just pulled out of the Multics project, which was a joint development project with MIT and General Electric to develop a new operating system.

Ken Thompson had been interested in operating system design for some time, and during that period he and I and also Rudd Canaday developed a design for the structure of a file system—that was on paper, it wasn't a program yet—and all these things sort of came together. The original implementation of UNIX was essentially to test out these file system ideas. It was originally just a scaffold; in order to try out a file system, you have to run it on something.

Fairly soon after that had happened we began using it for at least part of our own computation, and after demonstrating that at least something worked on the PDP-7 machine, we managed to get funding for a PDP-11 and it sort of grew from there.

But the original impetus was really to do research on the structure of file systems and also to provide an environment for ourselves.

For the benefit of those who aren't really familiar with early DEC hardware, could you give us some kind of comparison of the power of these PDPs and what's currently available on the desktop?

Yeah, that's worthwhile. It was amazingly small. The PDP-7 had 8 K words of memory, and a word was 18 bits, so it was an 18 Kbyte computer. It was divided half and half between user programs and the operating system. The PDP-11, which we got around '70 or '71, was only a little bit bigger—it was a 24 Kbyte machine, the first one was.

That was RAM—I forget what the disk was on the PDP-7, but on the PDP-11, the first disk that we had was about a megabyte total. That was the entire online storage. (laughs)

So I take it that UNIX in its early form was a lot smaller than it is now.

Yes. It definitely was.

How did it evolve into its present form, and what drove that?

I've mentioned the first two major stages, on the PDP-7 and PDP-11 machines. Over the next couple of years, in the early '70s, we got larger and more functionally complete versions of the PDP-11; the 11-45 had memory protection, for example—the original machine did not have a memory mapping scheme. That could take a fair amount more memory.

It sort of tended to get somewhat bigger, and we got internal customers—we managed to persuade various people inside the company that this was an interesting system.

The first group that that took place with was the typists in the patent department. They began using the system as basically an early form of word processing. They began typing in patent applications and formatting them, and they would send them off to the patent office in Washington.

Other early work was undertaken by other groups who adopted the system for producing what are called OSSes, Operations Support Systems, which are various computer systems that were used in the telephone company applications, the Bell systems applications, for doing quite a variety of things, such as keeping maintenance records, catching trouble reports. They would connect them sometimes to switching ma-

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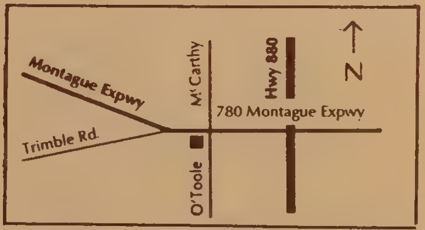

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chines, and the switching machines would produce these error diagnostics that would get reported on by this operation support system.

In the '70s there was an increasing use of the system internally. We began to license a small number of systems outside, all sort of individually, on a take-it-or-leave-it basis. It was really a sort of distribution of research effort rather than a product.

The most important technical change that took place in this period was that the system was rewritten in the C language. This was in 1973; before, it had been in assembly language. We actually generalized a lot of things during that rewrite; the earlier version was fairly severly limited in various ways.

The next really important thing was the realization around 1977 that the system possibly could be made portable. It was not actually planned that way, but it occurred to us that we could actually hope to move it. So we did the necessary rewriting and fiddling and so forth to make it less machine-dependent, and moved it to an Interdata 832 machine.

That didn't happen till 1977? I would have thought that portability would have cropped up rather quickly once the system was moved to C. Any ideas why it didn't?

I guess there was just enough to do keeping it going on the one machine... The process took perhaps a year; it was not just a matter of moving it, it was a matter of restructuring things somewhat internally with this in mind.

The last release of the system from the research group was the so-called Seventh Edition system, which was just after the move to the Interdata—I think the manual is dated 1977.

By this time the system was beginning to be used fairly heavily internally, and there was an internal support group that was formed to do the development and support of the applications that were being used inside the Bell system. That group, after a series of rearrangements and realignments and whatnot, in effect has become the Data Systems Group of AT&T today, the DSG organization.

Between '73 and '77, was anything else like an operating system being ported across hardware architectures? Or was this a new idea?

There was research work on it. There were a couple of systems that were written to be portable. They were never especially important in their own right; they were more demonstrations than real things. They were not necessarily really capable of doing real jobs the way UNIX was, even by that time. It was more in the nature of research.

So this was a pretty novel adventure.

It was a novel adventure in terms of taking a genuine system that was already in the field and trying to make it, to the extent possible at least, machine-independent.

Incidentally, portability was one of the goals of the Multics project; at least it was written down as a goal. They never actually tried to move it; it only ran on essentially one kind of hardware. But it was written in PL1, for example. Multics had a fairly complicated model of what the machine had to be like; it placed fairly great demands on the hardware, whereas UNIX has always been fairly modest in the demands that it makes on the hardware. In other words, it works on quite a large class of machines, whereas Multics was fairly specific in its design.

> " The essence of communal computing, as supplied by remote-access, time-shared machines, is not just to type programs into a terminal instead of a keypunch, but to encourage close communication."

Are you still working on UNIX-related projects, or something entirely different?

Some of the time is spent on UNIX-related things. As far as the System V product and other activities related to the sort of outside world as far as the system is concerned, I'm not very involved.

We, the research group at Bell Labs, do consultations and give advice and sometimes have arguments and whatnot with the people in the DSG, and maintain, I hope, a useful relationship with them. The research area is actually a fairly small fraction of the whole Bell Labs, roughly 10%, so the actual development is done in the same organization.

The second aspect is that we maintain our own version of the system for our own machines, in our area, and there is some development on that. That is a matter of exploring new things, in the context of UNIX, and, if we can manage it at least, we hope to sort of migrate them into the commercial versions of the system. I guess the most recent example of this kind of activity is the stream I/O mechanisms, which are now in System V Release 3. That was developed here a few years ago, well after the existence of System V, the product. That's an example of the sort of continuing relationship of what our own work on the system is doing to get into the product or otherwise outside.

The third thing we're involved in is standards committees outside, things like the ANSI C committee, the X3J11 committee, and Posix for UNIX itself, or UNIX-like systems. We have not had a lot to do with the day-to-day activities of that—we do try to follow them, and on points that we consider important, we'll try and step in and give advice or complain or write letters and whatnot. That is a very time-consuming activity, and the inertia of the whole thing is so great that you really have to work very hard to make a difference. But on the occasions where it seems important, we sometimes do get involved in that.

And then the last thing, which is I guess the most interesting as far as the future is concerned, is that there is work on an essentially different operating system, sort of a start-from-scratch thing that we intend to try and get going in our own group and see if people like it. It is not compatible with UNIX, particularly, although it's rather similar. The interface between the kernel and user programs is similar, but there's no attempt at compatibility. We wanted to sort of start afresh as far as a lot of the details are concerned, and then the code is not related. In other words, it's not a modified version of any particular UNIX system; the code began from nothing.

The intent of that is to develop a system that's much more highly distributed and growable, in that there are separate pieces that can be expanded independently.

What might that involve, in practical terms?

It is intended to run with one or more file servers, one or more CPU servers, and then a piece of the system is in the terminal itself. This is all somewhat unified, and connected by a variety of networks depending on the geographical separation. We would like to be able to have—you want to be able to get physically far from the machine without having to give up performance, at least without having to give up too much performance.

And so, for example, we would prefer to try and get away from the workstation concept, where the major computation takes place in the machine that you have on your desk, or next to your desk, but at the same time keep the bandwidth requirements fairly low and still have an interesting user interface.

We seem to be moving to a great user demand for graphically-oriented interfaces and mice and specialized hardware. There's a pretty high CPU price to pay for that interface. Do you feel ill-at-ease with the trend in user interfaces?

Well, yeah. There are several things going on here. One is the question of what the interface actually is, and it's clear that people do want, or at least manufacturers believe that people want, to have fancy things that are sort of Macintosh-style or influenced by that, lots of icons and whatnot.

Most of the people in this group are not particularly enamored with that approach. It just seems a little overly fancy, and furthermore if you're in the style of doing everything with selecting from menus and whatnot, that has real limitations in terms of programmability and building of tools and so forth. One of the characteristic things about UNIX is the way that you can take separate programs and glue them together to do specific jobs. That doesn't match very well with the pick-from-a-menu type of thing. There are points of contact—it's not a completely separate thing.

But the second thing is the details of the way that a graphics, or other interface that's not just linear text, not just a simple-minded terminal—how that works. The approach that our group has been using is typified by the interface that is in the AT&T 5620 terminal, and now the 630 series. This is a considerable step away from the old teletype style thing, and on the other hand it's in some sense compatible with it.

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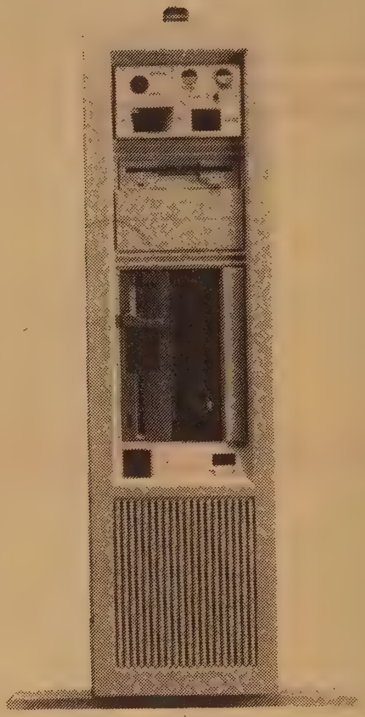

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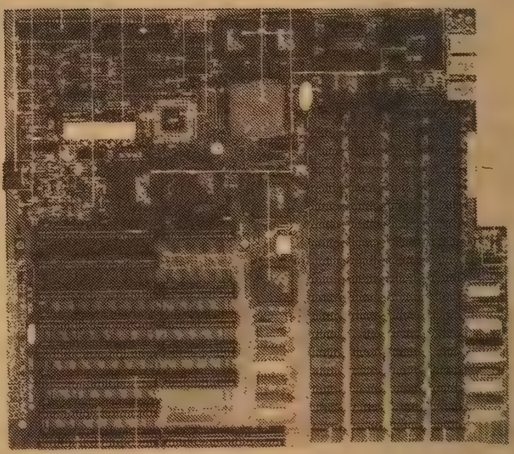

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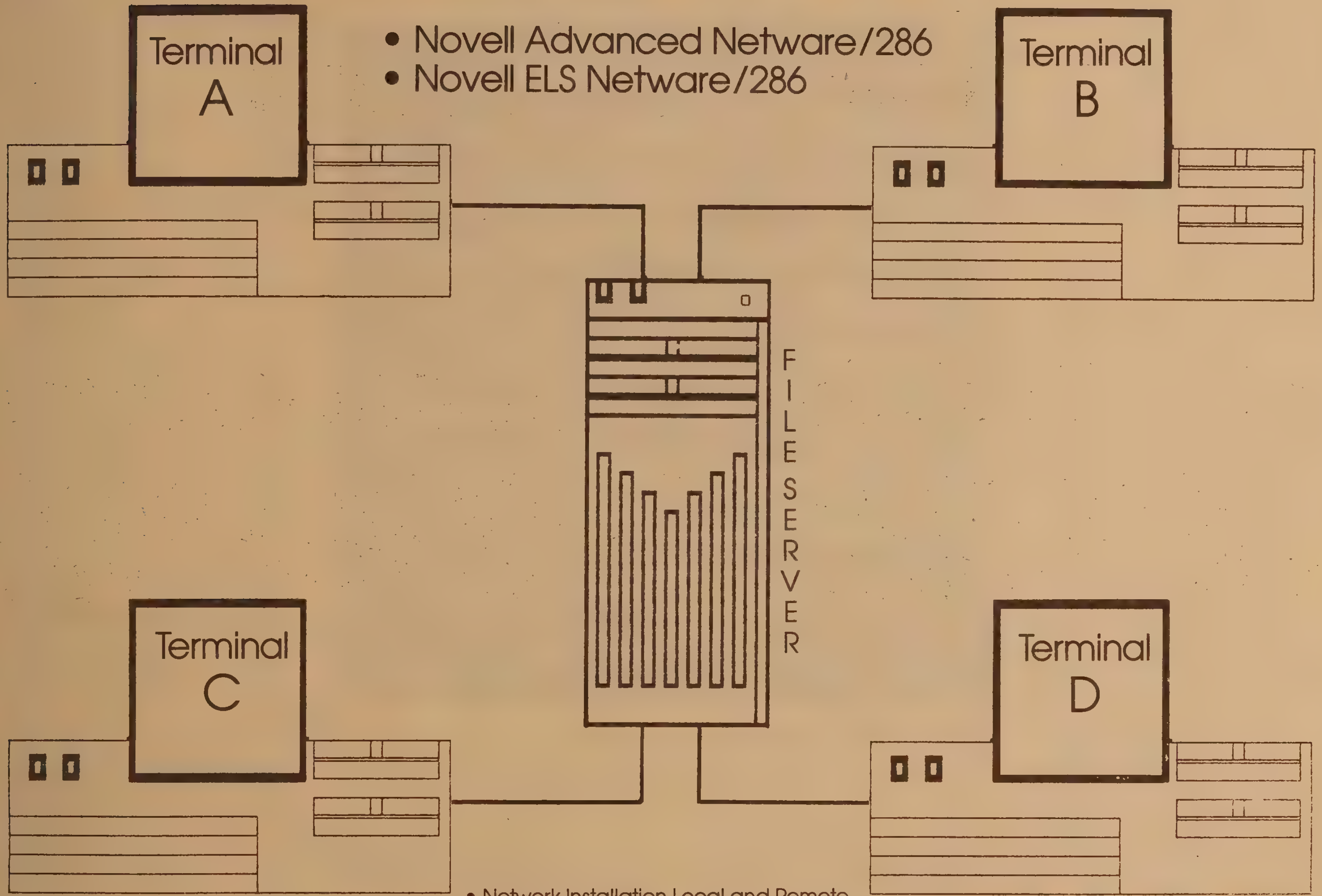

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tion, that's one important thing. And the connection to the computer can be a fairly thin wire. But it's a lot richer than the older thing; in particular, there are lots of windows, and there's plenty of opportunity for using the mouse, for example, to do editing. You can very easily take text and move it around and edit it on the screen, and move it from window to window, and if it's all designed right you can use this style of editing with any program. It doesn't have to be a specific application, because all of the activity is taking place inside the terminal. The editor, for example, that I use is a full-screen editor, and all of the editing activity, all of the sort of hand-editing activity, the fiddling of characters and moving text around and so forth, is done with a mouse. It also has a type command language, so you can do things like global changes and fairly sophisticated operations on the text in the buffer that is hard to do with an ordinary cut-and-paste editor.

But even with this terminal arrangement, do you still get the feeling of working interactively with the computer? This almost sounds like a block-mode terminal; do you still get that line-by-line interaction when you're working with the shell?

Oh, yeah. Definitely. With the operating system in the terminal, which is a simple operating system that is essentially a multiplexer of the operations among the various windows—things like editors tend to be split. Part of it runs in the terminal and part of it runs in the host, and the interactive parts are handled inside the terminal. As you type characters, they appear instantly.

The communication between the terminal and the host takes place sort of asynchronously to all this, and it turns out that only with the expensive operations, where the computation has to be near the file, does the host get asked to do anything. It turns out to be a very cheap thing—you can do a lot of editing with only a few CPU seconds.

And the distinction between what's being done by the host and what's being done by the terminal isn't visible to the user at all?

That's true. This approach of splitting the work between what goes on in the terminal and what goes on in the host has really only one drawback that I can see, and that is that the writer of the application has to do more careful design. If you're writing something on a workstation, where the computation and the updating of the screen are in the same program, you have to think less about how to divide it. In this approach, you have to spend a little bit more time deciding where you're going to split, and what the form of communication is. That's the application writer; the user never sees that.

But the application developer has at least some control over where to put the burden.

Right. One of the things that you can do with it—the windows on the terminal, when you create them, start out that there's a shell on each one. They're all independent. But you can download applications into individual windows, so that, for example, you can have an editor in one and a game or something in another. You can have several games going at once; it's all sort of multiplexed.

> "One of the paradoxes of portability is that when something becomes large enough, and used in a large enough number of places, portability becomes very, very, difficult. UNIX is used in too many contexts, both technical and organizational, to really have one single unified system."

How does this differ from the X terminal kind of concept that we're starting to hear more about—sort of an intelligent terminal that can process X Windows stuff?

From the broad point of view, the structure is very much the same as an X terminal. In other words, a terminal that is able to carry out the server part of the X protocol. The whole thing is a lot lighter-weight than that. X is sort of very big and complicated and pretty clumsy. The implementations tend to be fairly clunky. But the spirit of the division of what goes on is very similar.

What sort of hardware are we talking about between the terminal and the host computer—an Ethernet connection?

In this particular scheme of things, it's a serial connection. This is an example of the difference between this and X—that's been demonstrated for X, I guess, but it's not really feasible. We tend to have these 630s or 5620s both at the office and at home, and it works fine at home. You can have the same interface. Typically something like 9600 bits per second is needed, but it can be an ordinary serial line rather than a network.

In the new thing, the terminals will have a network connection, which is not actually Ethernet, it's a local distribution facility for our datakit network, and that runs at a megabit or two megabits per second. There the intent is that the operating system in the terminal will actually be a real operating system, a piece of the whole thing, and therefore it has to get remote file service over the network, so that the bandwidth has to be a bit higher.

That seems to embody the client-server architecture on a number of levels.

It's a little more symmetric than that in that the pieces variously can be clients and servers of each other, but yes.

The name of that project, by the way, is Plan 9.

Plan 9 From Outer Space?

Well, Plan 9 From Bell Labs...

A programmer asks: Is UNIX dead? That is, has it strayed so far from its small-is-beautiful and tools philosophy, as evidenced by the kitchen sink approach to V.4, that it's time for a new UNIX?

Part two of that question is, if #1 is true, do you see Mach, Minix, or another system as the new "UNIX"? In any event, what do you think of the way Mach is rearranging the kernel?

Well, as far as the first is concerned, I guess it depends on what you mean by "dead." Look, the thing that you can get now, or will, one hopes, soon be able to get, is relatively decent portability of programs over a very broad range of machines and organizations. People can trade programs. That's a real good thing, as far as I'm concerned.

I think the basic concepts are still valid, and we're all glad that they're being applied on a wide scale. It's true that the whole thing has become a lot bigger and messier and harder to get a handle on; it's not really very simple anymore, and getting around that is really part of what the Plan 9 thing is about—for a research organization, at least, it's not a good idea to spend a lot of time fiddling and making small improvements to this large system. We want to try and take a fresh view. So I guess in some sense the answer to the first question is yes, although "dead" is a fairly final thing. There's still plenty going to happen.

As far as the new system is concerned, I am a little dubious about all the things like Mach and also Gnu, in the sense that they seem pretty much to be recreating the same thing again. It seems to me that the people who are doing that would be better off, in some point of view, starting afresh to a greater extent and not being worried about recreating something that already exists. Particularly in the Mach case, clearly they want to add new things, they want to reorganize and also add capabilities. Which is reasonable. But in some sense it's a slightly strange thing for a university to do; they should be looking further ahead.

Now at the same time I can really see the advantage—if you want to have an impact, trying to take advantage of the popularity of something like UNIX can really help. There are very few people who can write an operating system from scratch and get people to use it, because people are very conservative. The fact that UNIX did manage to do this in a sort of unusual way, I think, is very rare, and it took an amazingly long time to happen. It's not as if it was overnight in any event. And so I can really see that if you want to make some kind of impact, that contributing to something that people already want has got a lot of attraction. It's not that I really disapprove of things like Mach; I don't. It's just that it would be nice if it were a little farther-thinking than sort of immediately providing the BSD environment.

Do you envision a programming language with a higher-level set of primitives that are still general-purpose? It seems to me that the things

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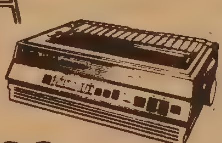

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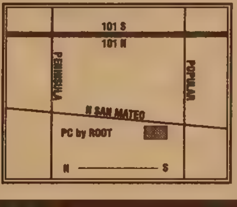

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you've sketched out so far indicate an operating system that has a lot of different facilities from the things we're used to; and I could imagine that we might want a different programming-language approach to make those facilities available to the programmer or to the general public who needs to come up with specific applications.

Well, I myself have not been involved in programming languages particularly since C, and so I don't have a really strong point of view, or at least I don't have a point of view to push. Presumably, the local thing that is closest to that idea is C++, which has gotten quite popular, and at the moment is sort of undergoing a lot of stress because Bjarne [Bjarne Stroustrup, author of *The C++ Programming Language*] is trying to get out the second edition of the book, and there are a bunch of things being added to the language and being thought about—sort of multiple inheritance and generalizations in various directions. So it'll be interesting to see how that goes.

But in the UNIX context, that may very well be the language that is the next large one, because it'll have a reasonably good basis for support and so forth. Its implementation tends to fit in fairly well, just as a compiler and handling the libraries and so forth.

Do you think programming language development is more conservative than operating system development? It seems that UNIX has changed quite a bit from its origins, and C really hasn't.

Yeah, that's true. I'm not sure I can really answer the question—you can use many languages on the same operating system. If you happen to like a different style, it's possible to build yourself a world in a different language that still fits in with the same operating system. So there's a lot more diversity, I guess. But on the other hand, in terms of major languages and the turnover in that, that does seem to be fairly slow.

Have you seen OS/2, and if so, what do you think of it?

I haven't seen it in detail. I've been told—what did someone say the other day? "It's a hollow shell. It doesn't really exist yet." That's probably unfair. No, I haven't investigated it.

Whatever its state, portability is not one of its goals.

Portability is not one of its goals.

What do you think of the OSF/UNIX International controversy, and is it all going to shake out at some point?

I have no idea whether it's going to shake out—it's so far out of my...

The controversy is interesting. There are lots of detail problems; you can say that so-and-so should've done this, and that was silly, or xyz. But my guess is that the underlying thing that has happened is that the system has just sort of gotten so widely used that it's just not possible for any one organization to exert control over it. I mean, it's just simply escaped, in a sense, and this is just what happens when that sort of thing occurs.

If it could be completely controlled by an impartial standardization body, well, maybe then certain things would happen. But the reason that that can't happen is that such bodies are so glacial, sort of glacially-moving, they can't cope. They can help. There are things they can do that are good. But they can't control the system as such.

So I'm taking sort of a philosophical view, that I guess it's not surprising that this sort of stuff has happened. One of the paradoxes of portability is that when something becomes large enough, and used in a large enough number of places, portability becomes very, very, difficult, just because—well, there are a couple of metaphors. Either the speed of light problem—just the time for information to propagate across the size of the body is so large that you can't really stay in communication. The other thing is just sort of an evolution metaphor, in that parts of the population are separated from the other parts, and therefore they evolve differently, and there's just nothing much you can do above a certain size to prevent this.

Now you can try, and I'm sure there are plenty of procedural things that might happen, but UNIX is used in too many contexts, both technical and organizational, to really have one single unified system. That's my high-level view of the OSF versus UNIX international.

Does it surprise you that the people who use UNIX today are so different from the people who originally used it? It's not just for researchers and typists anymore...

Yeah, I guess the degree to which it has spread is certainly a bit surprising. There were hopes that we would have an influence, certainly, and it was obviously having some sort of influence years and years ago. There are pieces of the design of other systems that were clearly done in emulation of UNIX. That's true of MS-DOS, for example.

Given that it's grown, it doesn't surprise me that the population has gotten more diverse, but that it grew to such an extent was really quite amazing. ■

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A Kinder, Gentler UNIX?

Improved Interfaces Herald Systems Of The Future

By Ken Greenberg

What do we of the business community need from our computers?

Power, speed, connectivity to other machines, and the sharing of peripherals such as printers, large capacity hard disks, and communication devices. We want "compatibility," to share information and have optimum processing flexibility (doing many things at once), while maintaining security. We also want advanced text processing, with excellent graphics and desktop publishing capability, and intuitive, easy use with added personal control over our computing environment.

Computer evolution is following a dynamic curve, from its beginnings in a massive central processor with a hierarchical, restrictive structure to the simplicity and limitation of a 64 K Apple or Osborne, and now pushing back up toward unlimited power and speed while maintaining personal control.

The real revolution in personal computers began with the success of the IBM PC and MS-DOS, and gained momentum with the Apple Macintosh Plus and Mac OS using the Xerox PARC style interface. Inevitably, the market is forcing the divergent styles of machine and operating systems to become more alike. The race is on to make the Intel 80 X 86 class machines behave more like Macintoshes, while Macs are becoming more "open" and much faster.

However, there are restrictions built in to these computers and their chosen operating systems that may limit their effectiveness at reaching even the near-term goals of power, speed, ease of use, and flexibility.

Meanwhile, 20-year-old UNIX, the operating system of, by, and for programmers, seems to offer all the power and connectivity anybody could want, but its renowned user-hostility has been a major obstacle to its widespread adoption in business environments. Currently the race is on to combine Mac-like ease of use with UNIX-like functionality, with virtually every hardware vendor involved, sometimes with multiple entries.

This article is an attempt to assess the current state of this effort, and to suggest that UNIX is a strong contender to become the environment of choice in the office of the future.

OS/2: Interface And Security Issues

Microsoft's OS/2, with Presentation Manager and LAN manager, attempts to address many of the crucial issues. It has a graphic interface, it's designed as a connectivity tool, and it utilizes a type of distributed processing (workstations share processing tasks with the server). However, it is by no means intuitive or easy to use despite the graphic front end, and it has built-in security problems.

Critical server-security problems with networks based on the OS/2 LAN Manager are raising doubts about their suitability for corporate systems. According to J. Scott Fabling of Rocky Mountain LAN Users Group, quoted in *PC Week* (January 2, 1989), "Anyone can walk up to a...server and modify or delete files. You don't need a log-in ID at all." Corporate users are reporting gaps that range from little or no log-in protection to nearly unrestricted access to network files. While Microsoft defends the security features of OS/2's LAN, Microsoft officials stated in a subsequent *PC Week* article that they advise firms not to use LAN Manager servers as workstations where security is critical.

Macintosh: Great Interface, Underpowered

The Apple Macintosh undoubtedly has the lead in machines based on what is called an "intuitive" interface. Though the Mac does require a certain familiarity—it is easier to use the second or third program you try, not necessarily the first—it is certainly easier and more instinctive than a present-generation DOS or UNIX machine.

However, the Macintosh is still slow (the newest Macs are faster, but quite expensive for their power) and they are closed, proprietary systems, in that they are not compatible or interchangeable with any other systems (without concerted effort, at least). In other words, they are expensive because they don't have any direct competition, and they do not yet really have the capacity to do more than one thing at a time. MultiFinder, the current Apple solution, does not provide true multitasking.

The new Macs (IIx, SE/30, and IIcx) based on Motorola's 68030 incorporate memory protection, which allows two applications to run simultaneously. Intel-based machines have had this capability for some time. (Apple is also rewriting its operating system to support true multitasking.)

UNIX: The Wave Of The Future?

UNIX was built as a multi-user environment. It is evolving rapidly toward "automatic" networking (to

The true success of UNIX in the marketplace depends on the development of "the right front end," along with an increase in the level of sophistication of computer users. An interface that allows a relatively new user to access the power of the operating system, without knowing convoluted commands, is the first and most vital step.

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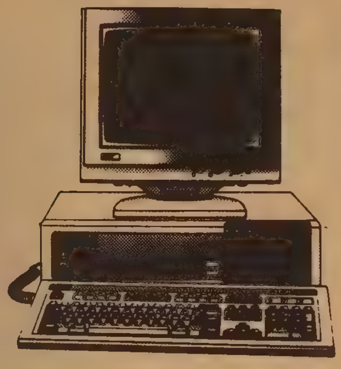

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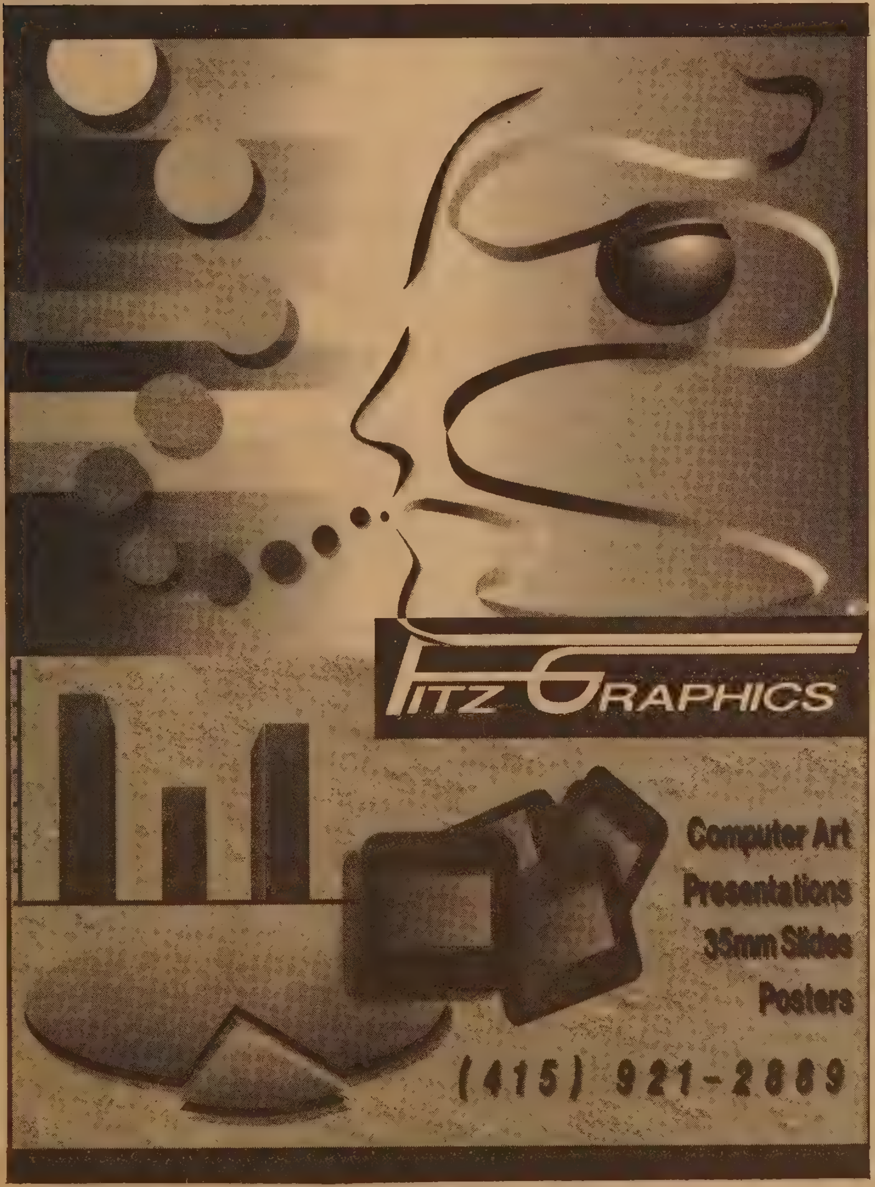

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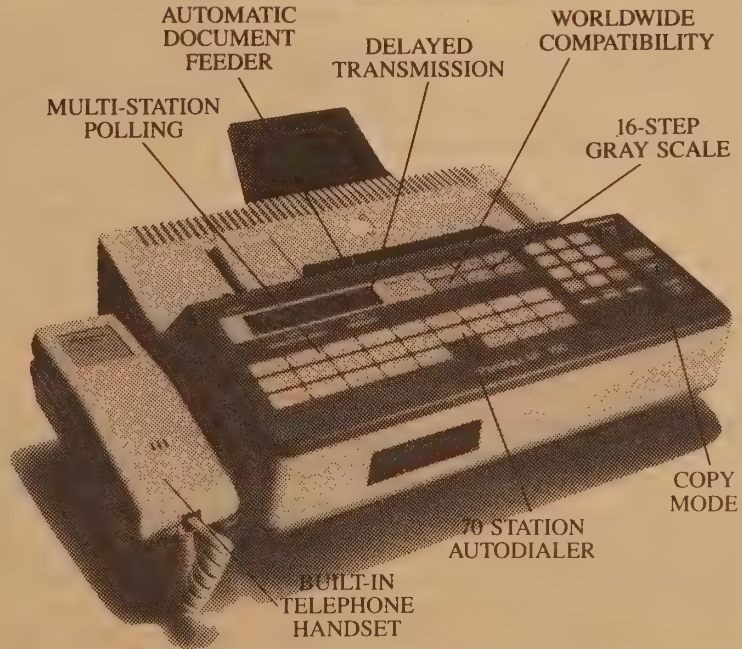

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share files and peripherals) as well as a distribution of processing through the use of such standards as Sun Microsystems' "ONC," Open Network Computing, and "NFS," Network File System.

This can give even a relatively small network of computers almost unlimited flexibility and power to process whatever is needed—if one machine is busy, another will be found; much more can be going on at one time. (Hewlett-Packard's recent acquisition of Apollo has been ascribed in part to H-P's need for this type of networking/distributed computing expertise, evidenced in Apollo's "NCS", Network Computing Services). And, unlike MS-DOS, UNIX has no practical, fixed limit to the size of disks or RAM that it can address; systems can be optimized as needed.

> **The system administrator of the future could be responsible for setting an environment for a new user that matches the style of the user's last computer, be it DOS, Mac, or UNIX.**

With its automatic multitasking, multiuser capability, and with permissions, protections, and strict security built into the system, it should be relatively simple to create applications with file and/or record locking, unlike the current situation with DOS or Mac OS. Also, unlike the Mac OS, UNIX is designed to port easily to different hardware architectures, for wider compatibility with different vendor's products.

UNIX, with its **alias** utility, can be made to act and look more DOS-like: a user (or system administrator) can choose "DIR" instead of "ls"; **alias** can be made to do the same things as batch files or INITs or macro keys do in the DOS or Mac world. And with the **grep** tool giving UNIX the ability to search for character strings without regard for case or field, a user could locate a record in a database without the restrictive command structure of *dBASE III*—much more in keeping with the ease and friendliness of the Mac database search functions in *MS Works* or *Excel*.

With the text-processing ability of "vi" (the visual editor) built into UNIX, it cannot be long before the right front end is developed to make "desktop publishing" and more finely tuned typesetting as easy as it is on the Macintosh. Kodak Corp. already sells a high-end, Sun-based professional "electronic publishing" system far beyond the capacity of the Mac or PC.

The true success of UNIX in the marketplace really depends on the development of "the right front end," along with an increase in the level of sophistication of computer users.

An interface that allows a relatively new user to access the power of the operating system, without knowing convoluted commands, is the first and most vital step. A new user must be able to search for a name in a database, regardless of case, without knowing the awkward command **grep "[Nn]ame" filename**, and should be able to do it with symbols and menus, pointing and clicking, in much the way the Macintosh allows. This has become a requirement of future systems.

In order to succeed, UNIX must be designed a bit more with marketing and business concerns in mind, and less by and for programmers; it must be designed for an "average user." At the same time, the average user is becoming more aware and more computer literate, and a bit less intimidated by the technology.

System Administration And The Average User

Some of the strengths in UNIX are enhanced by a knowledgeable "key operator" or "administrator." And some of its weaknesses, such as non-dynamic disk directory sizing, demand an administrator to keep the system clean and running smoothly.

As more demands are made of computer systems, and as security threats such as viruses become a hard reality, the idea of a system administrator is less threatening, even to the vocal advocates of "personal" computing. Even in the simplest of networks today, as the net grows and more demands are made of a combination of technologies, it is necessary to have one person who knows more than simply what software is running on their own machine.

Growing accustomed to an administrator for a network will make it easier for users to accept a UNIX "super user" with control and maintenance responsibilities. The system administrator of the future could be responsible for setting an environment for a new user that matches the style of their last computer, be it DOS, Mac, or UNIX. And for the more demanding user, the ability in UNIX to see behind the pretty interface, to know more of what is going on, and to optimize one's own environment is invaluable.

Choices

The opportunity for UNIX today lies in the tremendous changes going on in the world of computers. Options are proliferating, and inevitably choices must be made between new technologies and variations on the old.

If the cost of change (whether in terms of hardware investment or training in new software) is high enough, it creates an opportunity for alternative technologies. When IBM introduced the PS/2 line with its new hardware bus, the sales of Compaq computers went up drastically; they have a strong lead in 80386 PCs sold today as a result. At the same time, the introduction of OS/2 gave Macintosh and UNIX systems sales a boost. If you need to learn a new operating system to break the 640 K barrier, or to find multitasking, why not consider strong alternatives?

This is the opportunity that exists for UNIX today, and with the right technology and timing, the inherent strengths in UNIX give it a substantial chance to play a much greater role in the computer world of tomorrow.

Major Vendors Support UNIX

Tomorrow is already here. All the major vendors are hedging their bets and devoting substantial resources to UNIX. At a recent trade conference, a high level IBM executive made it known privately that although DOS is expected to retain about 60% of the company's PC market share, IBM's projections are now that UNIX and OS/2 will be about equal at 20% each in the near term.

Sun Microsystems and AT&T are completing the Open Look interface, and have the support of a large group of computer vendors in UNIX International. Apple has AU/X, Hewlett-Packard will have both HP/UX and the Apollo UNIX, and IBM has quietly licensed NeXTStep while remaining a major partner in the Open Systems Foundation (OSF) group promoting Motif. Microsoft and SCO have XENIX for Intel-based machines.

Battles fought and won in 1989 are going to make a tremendous difference in how we use computers in the decade ahead. The three-way battle for the desktop among OS/2 PM, UNIX, and the Mac will be one of the major ongoing stories for 1989.

> **The introduction of OS/2 gave Macintosh and UNIX systems sales a boost. If you need to learn a new operating system to break the 640 K barrier, or to find multitasking, why not consider strong alternatives?**

Another battle will be for the control of future UNIX standards, as evidenced by the current contention between the UNIX International and OSF factions (with many vendors endorsing both camps). The more protracted and divisive the fighting within the UNIX camp, the worse will be UNIX's prospects against OS/2 and the Apple Macintosh. ■

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SECOND OF TWO PARTS

Regis McKenna: The Future's Bright

By Mary Eisenhart

PHOTO: TOM ZIMBAROFF

What's in the cards for high tech? Quite a bit, according to Regis McKenna

In last month's issue, PR wizard, venture capitalist, and all-round industry architect Regis McKenna discussed the unique nature of the high-tech industry and how, as he explains in his book Who's Afraid Of Big Blue, *the monolithic approach that was IBM's historic strength doesn't work so well in the innovative, fast-moving, constantly changing environment that currently characterizes the industry.*

This month he talks about strategic alliances, niche markets, and other key elements of success in the high tech world of today.

A point you make in the book is that one of the factors compounding IBM's problems was that it was constantly having to drag along and support a huge installed base of stagnant technology, which placed a lot of restrictions on research and development because they essentially had to retrofit everything.

Right.

At the same time, the concerns of an installed base are real—if a guy's invested a couple of million dollars in software, he isn't going to want to throw it all out. But again, the company's got to make a decision at some point about when to cut the old technology loose because it's consuming too much for what it's producing. When are you going to cut your losses?

Well, it's not just cut your losses, but to integrate. IBM has one of the most formidable research organizations, but they sit in the back room waiting for things to happen, rather than working with customers to solve that very problem—how do I integrate more diversity into my environment?

I just had breakfast two weeks ago with probably one of the largest purchasers of computers in this country, and I said, "Tell me what brands you have in your shop." Well, he just went through the whole host of everybody. He's got IBM, he's got Unisys, he's got DEC, he's got H-P, he's got Suns, he's got Compaqs, he's got lots of clones, he's got some Macs. What he's doing—he's doing the integration work.

> "Integrating diverse environments today is where the world is moving, and certainly people are solving those problems. But IBM tried to control a monolithic world, and as a result, I think, came late to trying to solve that problem."

IBM could've created more diverse environments for themselves by creating better technology here and solutions here, and then letting their R&D work on that problem. Because the world is solving that problem now. Integrating diverse environments today is where the world is moving, and certainly people are solving those problems. But IBM tried to control a monolithic world, and as a result, I think, came late to trying to solve that problem. As a result their customers were already filling up their shops with other pieces of equipment.

I don't think they could've foreseen, and they clearly didn't foresee—they didn't believe that the PC was going to do what it did to them, or that it would drag MIPS away from the mainframe. But once confronted with that—it's like being in the middle of a sandstorm and trying to figure out what direction you should go to find safety.

I'm not minimizing IBM's difficult decision to do that. It's just that I think in certain segmented markets, there could've been a strategy—"we are going to move beyond that base." Because that new technology creates a whole new base. It did with minicomputers. It did with personal computers. It has with laptops.

So when you go back to the idea that the technology creates a market, the idea, I think, at IBM, is that the use of computers is just an extension of the old computer market. It isn't. The new technology is bringing new users. Fifteen years ago, even in these technical companies in Silicon Valley—and I worked for hundreds of them—you would not find engineers working at computers. Today, you don't find an engineer who *doesn't* work at a computer. What created

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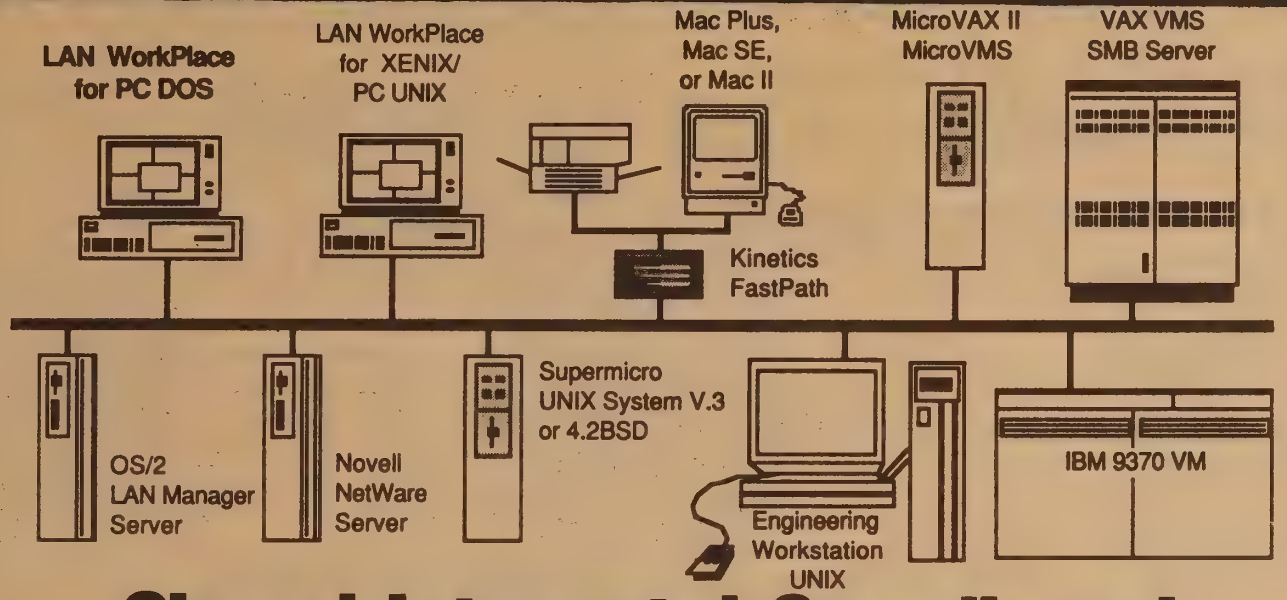

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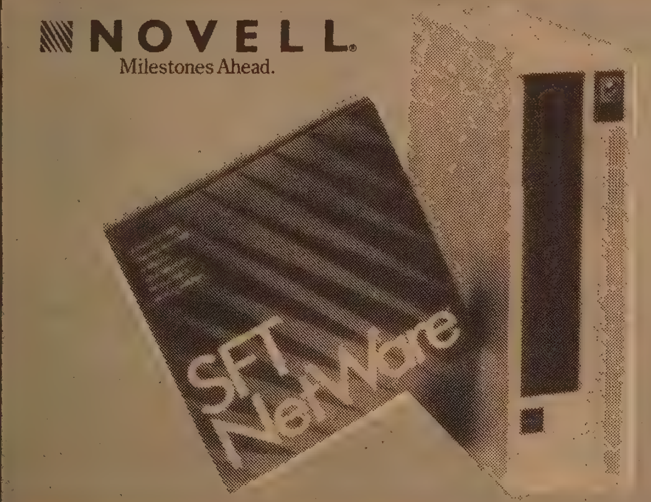

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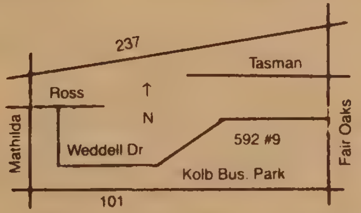

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"The idea, I think, at IBM, is that the use of computers is just an extension of the old computer market. It isn't. The new technology is bringing new users."

that marketplace for computers for engineers? High-powered workstations.

And engineers looking at them and saying "Wow! Look how much more work I can get done faster."

Yeah, and it wasn't an extension of the mainframe. It wasn't just a "Well, let's give a terminal to the mainframe." That isn't what created that marketplace, it was a whole new generation of technology that created that market.

I get the impression you think IBM's adoption of SAA—"hey, we've been doing business for 60 years, let's make our machines talk to each other!"—is a classic case of too little too late.

It was a reaction to the marketplace. If you look at DEC and H-P and all the other companies that are out there, they're all talking about moving into multivendor environments. And all that talk, and all the diversity that exists, IBM made the choice.

At one point IBM said, "Well, they may be putting one or two machines in there, but listen, they're just doing that to keep us honest, and they won't get much ground anyway."

But what's happened is that the MIPS are moving away from the mainframe to smaller machines, and there is more investment in the personal computer now—the whole low end is certainly a larger market than the mainframe marketplace. The lower two-thirds [minis and micros] is growing faster than the upper third. And as a result they've realized that they can't go it alone in that environment, they're always going to be in multivendor environments, and multivendors are all saying "Hey, we'll work with anything! We're customer-oriented! We're customer-driven! What do *you* want us to do? Want us to hook up to this thing? We'll work on it!"

Well, now IBM is going to everyone and saying, "Don't work with those other guys, we'll connect all our stuff together." It's still this mentality of trying to fight the multivendor environment by saying you can be an all-blue shop. And the world isn't that way any more. People are going to buy what they need to solve their specific problems, and then try to get these things talking to each other. And they're not going to buy one of all levels of computer from anybody. There's too many options.

Too many options can also breed chaos, though—hence the importance of standards.

Yeah, but there's too many standards too. We haven't reached that toleration point yet. It's a double-edged sword. On the one hand, the more standards there are, the easier it is for people to get into the business, because they know what standard to build to get into it. As one engineer told me years ago, all these standard things, interface and everything else, were major issues—"What do I do? If I don't pick the right one, I'm out of business." But today I can say "That one, that one, and that one." I can put them into my machine, and I can at least tell the guy, "Hey, I can conform to your standards." Plus the chips and software are all built around a standard, so as a result it's cheaper and easier for me to get into the business.

So it opens up the world for more competitors in the the computer business to have more standards. But on the other hand, it's hard to differentiate yourself when everybody has the standards, so that makes it hard to market, too.

And the other thing is, yes, it's confusing, because the standards keep changing. Which standard? OS/2? Well, obviously when it first was announced, all the analysts said "Well, that's it. Boom! The world's going to be OS/2." Well, things have changed since then. I remember watching the pie charts—it was really interesting, watching the pie charts on OS/2. When it started out it was going to be 50-60% of the marketplace, and each six months that pie chart gets smaller and another standard fills in. Not a lot of them, but UNIX gets a little bit bigger, good old DOS will hang in there for a while, so the pie chart of OS/2 gets smaller. And the longer it is, the smaller that pie chart is going to be.

Do you have any comments on the future of the NeXT in view of its Businessland alliance?

Sure. I talk to Steve, he and I are good friends.

First of all I think we have to be careful, because of Steve's unique personality—he is always trying to drive the leading edge—that our expectations for him are well calibrated. Steve starts a company, and people say "Gee whiz, there's a zillion-dollar comapny."

To build a computer company takes time, and I don't think Steve has any false notions—this is not back in the days of the beginning of the personal computer again. There's many more competitors out there, it's a tougher marketplace. You've got to maintain that leading edge, but you've got to do a lot more things too. You have to build good solid sales organizations, there's not a marketplace that is almost infinitely growing that will buy lots of things, like the early days of the PC.

He's shipped quite a few of the machines; feedback—I've talked to some people—is very, very good. I think that he will continue to refine the machine, continue to build the software base for it; NeXTStep is providing an opportunity to do that.

I think now he's opening up the ability to take this through Businessland, which is a real high-end, high-quality sales organization. I think all Steve's moves have been thought through, and I think he's doing, really, a superb job. The only thing that might be out of line is people's expectations of him, and that's often hard to control. I think that NeXT will be a real contributor to this whole area of powerful workstations.

A lot of UNIX vendors we've talked to, most of them with their own in-house sales organizations, are skeptical about the ability of the dealer channel to provide adequate UNIX expertise and support.

Not necessarily. I believe, in the case of Businessland, more than half, maybe 60%, of their sales come from their outbound sales organizations. Businessland services major corporations. Businessland is intended to be more [oriented toward] selling systems and integrating them into a corporate environment. They've done a pretty good job of that. I'm pretty sure that's Dave Norman's objective with Businessland, to allow them to be the premier systems sales organization in the country, if not in the world, and I think Steve's selection of that is very good for him, because it would take him a long time to develop that kind of expertise. You have to hire prople, train them, teach them how to find business.

You can design a computer in two years, but it takes five years to get a sales force effective.

Especially when you're dealing with sophisticated equipment that's constantly changing.

That's right.

One of the big complaints you hear from people who just want to buy and use the tools is that they walk into a store and encounter salespeople who are maybe moving over from another retail environment and don't know the products. And it's hard—you can't go in cold and explain to people what the difference is between 1-2-3 and Quattro.

I think the other thing of building a sales force is the problem of this "other," and that is that there are so many vendors out there, all of which have their own few salesmen, that it's hard to get a large body of qualified salespeople together.

See, this was easy in IBM's day, in a way. When you're the only game in town, you're the leader in the world,

"Mitch Kapor was not a software expert. Mitch Kapor, with a tool in his hand, created a company. I think that the ability to put low-cost design tools and idea generators into people's hands—we don't KNOW what will come out of that. It could be an infinite amount of chaos, but it could be a lot of solutions to problems too."

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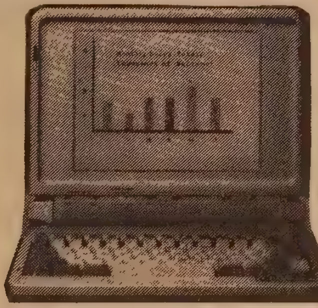

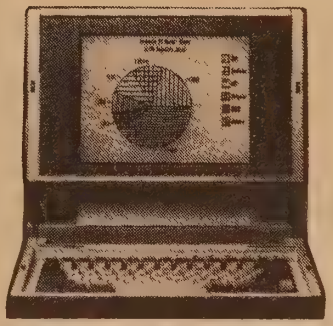

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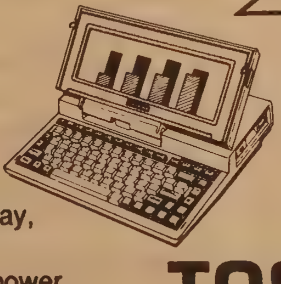

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The problem with the people in retail in this business is that they tend to sit behind a counter. Where their hands-on knowledge comes from is if they're real hobbyists and they go home and tinker and all that. Whereas if you are an outbound guy, who's basically an integrator, you're out there with a customer solving a problem, so your hands-on experience is real. It's not from behind a counter, it's from under a desk.

We had a problem here with one of our systems smoking, and a guy came in crawling under the desk and everything. So you really see what's going on, you understand, and you learn from doing. Which is the primary mode of learning in the computer business, learning by doing.

One of my favorite quotes in the book was from the chairman of Cray, who said "If we can maintain the quality of our business, that's all that counts. Size doesn't count. We can manage the company to whatever size it needs to be in order to satisfy that basic thing—what we do is make the world's fastest computers."

It's great because it flies in the face of the great American grow-or-die myth. Apple, for instance, thinks its survival depends on becoming a $10 billion company. It sounds like what you're saying is that success depends less on becoming a certain size or attaining critical mass than on knowing what you are and doing it.

And owning a market.

If you go back and really look at the innovators in America, they lost that innovation to people who said the most important thing is owning a market, not making innovation. Japan did not invent televisions, VCRs, radios, transistors, semiconductor memories—you name it. They didn't invent any of that, but they own the markets for them. They own the markets for most of the products they didn't invent. And so what they focused on was "How do we satisfy the customers in a particular marketplace and own that customer?"

What we focus on is strictly the continued growth and innovation and everything else, and don't realize that the most important thing is not that growth, but that you grow by continuing owning markets. Intel, if you will, shipped the most memories at one point, but they obviously didn't own the market, because they lost it.

Lotus owned a market once.

Sure. Whatever. And so the important thing is not just the innovation, but also market ownership. As you grow, and you're big, you think about size and growth and all of these major factors, and you forget that most markets start very small. Desktop publishing started small. The automobile started small. Telephones started small. Everything you can think of in technology started as a very small market. And the innovation is what made it grow.

Take the automobile. The automobile started as a hobbyist device, just like the personal computer. It was only the people who could sit under this thing on weekends and tinker with it and knew all the fine adjustments. And as the technology grew, as you took the crank out of the front and you got more of an automatic starter and put the starter inside and went to automatic transmissions—each of those innovations expanded the market.

Just like the personal computer. Very few people used these things when there wasn't a disk drive. It was a pain. It was really tough. And so as the innovations come, as the technology becomes more transparent, the market expands. So you've got to understand that it isn't just the growth, because growth will lead you to say "Build the same thing, and masses of it."

The Tramiel approach.

Yeah. And in fact the way you grow is these incremental innovations that create new markets. And then make sure you are continuing to own that marketplace through those innovations.

I don't mean to minimize growth, because it allows you to bring in new people, bring in fresh ideas. It allows you to reward people, give them promotions—it's part of the whole philosophy of keeping a company exciting and moving new innovations. But when you focus only on growth, you lose sight, I think, of the smallness of the customer. The customer becomes lost, and generally most successful markets are comprised of small groups of customers. It's particularly important in the computer industry, because all computers are sold by word of mouth.

In all the seminars I give, I ask the question—and I've done this from Tokyo to London, to literally tens of thousands of people—"Have you ever been asked the question 'What personal computer should I buy?' or have you asked that question?" Virtually 100% raised their hands. And

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Many 386's run only Microsoft programs under latest Windows-386. ZTS-386 was found as one of the very few computers that proves total compatibility by running other programs under Windows as well (as in Compaq & IBM PS/2). For example using Dbase III under Windows-386!

ZTS-386sx

Landmark = 20.6 Mhz
16 MHz 386sx system
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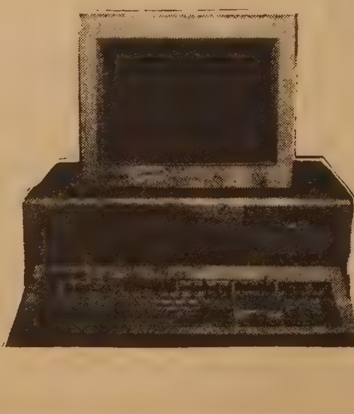
ZTS-386sx system is designed with the future in mind. It takes advantage of the NEAT chipset from Chips & Technology, which offers you a full capability of the 386 and its superior features. It's a complete 386 system with 16-bit design. It runs all of the Multi-tasking and Multi-user software!



- Uses **"NEAT"** chipset. See details above
- **1 MB** RAM, expands to 8MB on board.
- 1.2 MB drive, R/W 360k & 1.2MB.
- **42 MB** hard diskHitachi, auto pard.
- **16-bit** HD cntrl, For 2 Flp & 2HD.
- Herc compatible Mono-graphics.
- Samsung amber 12" monitor.
- Socket for co-processor **80387sx**
- Tactile feel keyboard, enhanced style.

ZTS 286-12

12 MHz 286 0 W/S system
Landmark = 16 Mhz!

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- **640k** RAM, takes 4MB on motherbrd
- 1.2 MB drive, R/W 360k & 1.2MB.
- **42 MB** Hard Disk Hitachi, **autopark**
- 16-bit HD cntrl, For 2 Flp & 2HD.
- Herc compatible Mono-Graphics.
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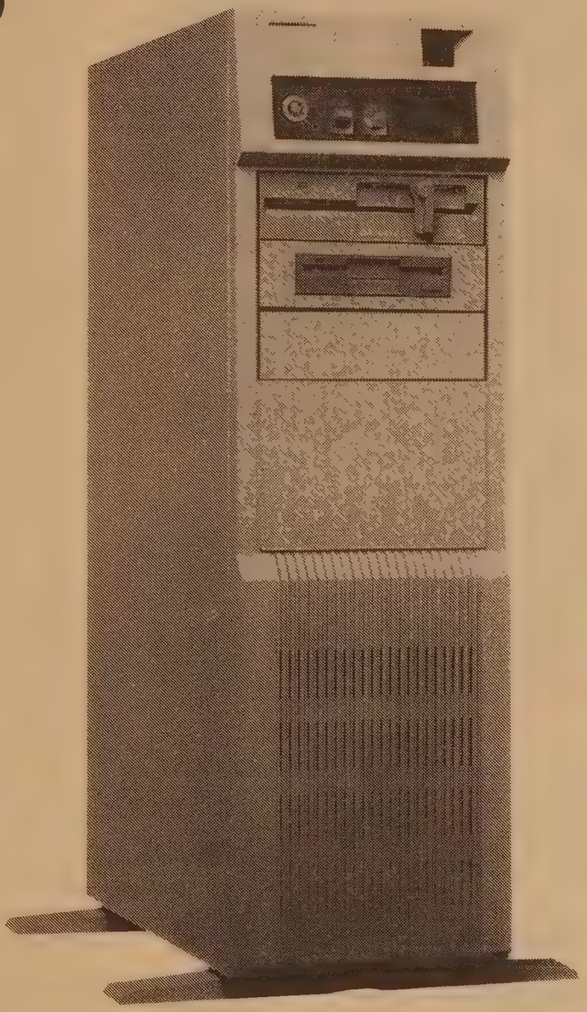

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"…there's no next-time purchase of a computer for a lot of users. And if there *is* a next time, you want to make sure that that first investment leverages your second time. With computers, you're always buying a piece of the future."

then I asked the question, "Have you ever been asked the question, or have you asked, whether you should switch from Pepsi to Coke?" Virtually nobody raised their hand.

The difference is that when you buy any complex technical product you need more security. You need expert advice, even if it's a friend who you think knows a little bit about it. Whereas consumer, there's no risk. It's fifty cents or a dollar, and you're not risking anything. You don't have to interface with this thing.

"Personal" has a lot of connotation of "This has a lot to say about me personally. I don't want to go home and feel stupid about it. I don't want to go home and spend hours trying to figure it out 'will it really help me?' after I've spent all this money." Whereas if I don't like the taste of something I bought, if I've never tasted a certain brand of something, I still go home and it doesn't bother me that I don't like it, I just won't buy it next time. But there's no next-time purchase of a computer for a lot of users. And if there *is* a next time, you want to make sure that that first investment leverages your second time.

With computers, you're always buying a piece of the future.

Which you can't see very well.

Which you can't see. You're going to grow with it, it's going to expand, you're going to have new technology, it's going to become easier, you're going to get nice pieces of software that'll come along. So you're always buying something that's out there that's not achieved as yet. So it's a fundamentally different product from anything else we do.

Is there a built-in ceiling anyplace? Is there a foreseeable point at which the growth in high tech levels off?

If there is, I don't know that anybody can foresee it. At least historically, since the integrated circuit came into being in the late '50s, we have seen new markets emerge with every new generation of technology. We've gone from transistors to ASICs, that whole swing of technology, from literally putting one device transistor on a chip to putting a million on a chip. That whole evolution has always seen, in each new generation, a corresponding increase in the number of applications possible.

So I don't know what the future kinds of applications will be. I can only tell you that in 1970 nobody knew that there would be a microprocessor. In 1975 nobody knew there would be a personal computer. In 1976 no one knew there would be a retail computer industry. In 1978 no one knew there would be a laptop. In 1980 no one knew there would be a superworkstation. And as you go up, there always seems to be the technology creating these new opportunities and possibilities that create other new possibilities.

I could certainly conceive of the day that you could put in front of a relative layperson a computer in which you could design anything you wanted to design. You and I could design an integrated circuit. That is certainly not out of the range of possibilities in the next 25 years. When you put the ability to design a complex device in the hands of lots of people, what will result from that? Lots of failures, probably, but also lots of new ideas.

The ability to turn an idea into product reality when you put tools into people's hands—you have 25-50,000 software applications out there. Where did they come from? They didn't come from software experts. In fact the software experts are having a hard time getting their products out. It's been the novice—Mitch Kapor was not a software expert. Mitch Kapor, with a tool in his hand, created a company. I think that the ability to put low-cost design tools and idea generators into people's hands—we don't *know* what will come out of that. It could be an infinite amount of chaos, but it could be a lot of solutions too. ■

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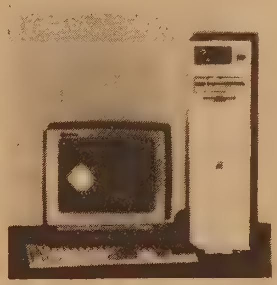

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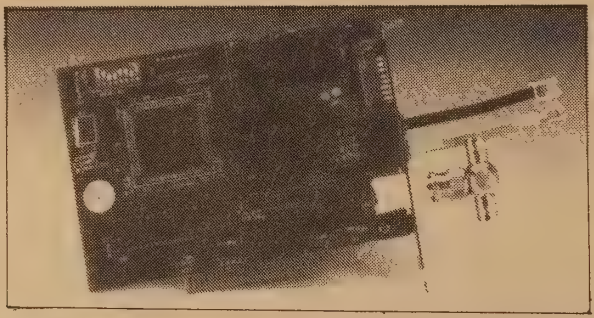

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PRD+ Keyboard Shorthand

Double Your Transcription Speed With Fewer Keystrokes

By Max Millard

Since alphabetic writing began, one of the biggest technical problems has always been transcription, the process of converting spoken words or handwritten notes into printed form.

The art of transcription has advanced not in small steps but in quantum leaps, with a mere handful of inventions. The nineteenth century saw two major breakthroughs. The first was the development of modern shorthand, particularly Gregg and Pitman, still the most popular systems in the English-speaking world. The second breakthrough was the typewriter, which except for mechanical improvements hasn't changed much in 100 years.

In this century came the stenotype machine used by court reporters. It's fast enough to keep up with normal human speech—about 175-200 words a minute—but the keyboard is radically different from that of the typewriter, and it is incompatible with most computers and printers.

Finally, a new system is available that can be as fast as stenotype, is 100% compatible with IBM PCs, is inexpensive, and has a minimal learning curve. It's called *PRD+* keyboard shorthand. The name stands for "Productivity Plus," because skilled operators can double their typing speed without increasing their number of keystrokes per minute.

PRD+ works by assigning a short form to every common English word or phrase. When the short form is typed, followed by a space or a punctuation mark, it expands into the full form. For instance, when you type "akj" it comes out as "acknowledge." Typing "asa" produces "as soon as."

No matter what software you use—whether it's a word processor like *WordPerfect* or MS *Word*, a spreadsheet such as Lotus *1-2-3*, or a database manager like *dBASE IV*—you can use it in conjunction with keyboard shorthand. Many specialized word lists are available on disk, to go with the most popular applications. There are also word lists for various professions or markets, including a legal list, a medical list, and a list for the Department of Defense. Lists are constantly being expanded and improved; some lists contain over 6,000 short forms of terms.

PRD+ keyboard shorthand was invented by Larry Parks, the president of Productivity Software International in New York City. He released the first version at COMDEX in November 1985; the third version, 2.0, has been shipping for about a year.

The system comes on a single disk and requires 215 K of memory. It works in the background; you load it first, then load another program on top of it. You have a choice of either creating your own list, or using one of the many pre-written ones, such as a list of 1,400 words most commonly used in business correspondence.

If you create your own list, the best way to start is by making up short forms for the words and phrases you type most often, such as your own name—your initials might be appropriate shorthand in that case.

The program is capable of storing up to 8,000 root words and all their variations. For example, my abbreviation for the word "locate" is "lc". "Located" is "lcd", "locating" is "lcg", and "location" is "lcj". The system recognizes all these variations, so that they don't have to be entered separately into the word list. The system's "translation" from short form to the full-length word or phrase is almost instantaneous.

I started with a pre-release version of the program in 1987 and have built up a list of almost 6,000 short forms and variations—perhaps 15,000 words altogether. The prospect of memorizing so many words might seem ominous, but in fact there are certain patterns to abbreviating, and once you've mastered these patterns it's easy to guess the short forms.

Some of the pre-written word lists use principles of Gregg shorthand, which first appeared in 1888 and has long dominated the American market. The McGraw-Hill Book Company now owns the rights to Gregg shorthand, which is still taught to millions of students every year. To mark the 100th anniversary of Gregg, McGraw-Hill signed an agreement with Productivity Software to jointly promote the use of keyboard shorthand.

"McGraw-Hill is doing a very big job in introducing Gregg computer shorthand into the school systems," says Parks. In 1988, almost 1,000 schools nationwide began teaching Gregg computer shorthand with *PRD+* software. Panasonic, the nation's third-largest electronic typewriter manufacturer (after IBM and Xerox), installs the PRD+ system with about 1,500 short forms in all its typewriters.

In September of last year, Productivity Software released a peripheral software product, *PECK*, which allows PRD+ users to press keys in sequence instead of in combination, thus making keyboard shorthand more accessible to the physically handicapped. In November, it released a 12,000-word list of short forms based on Stenoscript, a 40-year-old transcription system that uses phonetics to abbreviate words and is, in some respects, more efficient than the Gregg method.

Who should use this program? Says Parks, "Anyone who uses a keyboard. If you think about it, there shouldn't be any reason to type a whole word. If you have an abbreviation for a word, why shouldn't the computer know what the word is? How many times do you type 'Thank you very much'? Why should you have to keep typing that out?"

According to a study published in 1923 by the lexicographer G.H. McKnight, a mere nine words (and, be, have, it, of, the, to, will, you) account for a fourth of the words actually spoken or written in English. Just 43 account for half the English words used. Therefore, learning the short forms for even a handful of words can mean a considerable saving in keystrokes.

The professional version of *PRD+* sells for $129.95, and the standard version, with a smaller capacity, is $89.95. Each comes complete with a copy of the *PECK* program and many built-in word lists for use with the most common software and programming languages, including BASIC, FORTRAN, and Pascal. More extensive word lists, such as medical (2,700 terms) and legal (2,600), are available at extra charge. Contact Productivity Software International, 1220 Broadway, New York, NY 10001, 212/967-8666.

Meanwhile, why type more than you have to? ■

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So You Bought A LaserJet—Now What?

Third-Party Fonts, Utilities—And Output On The Mac!

By Birrell Walsh

I thought I needed a new printer, so I went looking at laser printers. Expensive, yes. But, I said to myself, imagine all the pretty fonts, and the graphics! All the reviewers agreed the Hewlett-Packard LaserJet II was a Very Fine Machine.

I did not know what I was getting into. It turns out that the basic LaserJet is nothing but a fancy letter-quality printer. You get a small selection of fonts, too little memory to do a full page of graphics, and an impenetrable control language. Lordie, Lordie.

I needed help, and I went seeking it in the third-party market. Before my quest was done, I had found a cheap source of good fonts and memory, a laser-printer control utility, and an interface that allows my Mac to use the printer too.

JetWare

My brother-in-law Robert Grant heard me fussing and told me about the company he works for. It is called:

JetWare Computer Peripherals
2635 Lavery Court, Suite 5
Newbury Park, CA 91320
(805)498-8848

I discovered they have very good prices for font cartridges that emulate the more expensive H-P line. The following are list prices; both the H-P and the JetWare products are often discounted on the street:

HP Cartridge	JetWare Equivalent	HP Price
B	$225	$250
F	$225	$250

They sell combined cartridges for word processing and spreadsheets, which have all the fonts you could reasonably need.

Finally, they sell a one-megabyte memory expansion for $495. Alas, I had already bought the memory expansion from H-P, which is now listed at $595. And the JetWare is expandable, which the higher-priced H-P memory board is not. Live and learn.

LaserMenu

With fonts in hand, I still had the problem of the H-P command language. It is quite obscure. Not all the commands are explained in the User's Manual. The manual tells you the other commands "are explained in the LaserJet Series II Technical Reference Manual." Since it is not easy to order things from H-P (it took me calls to four different numbers to get the prices for this article), I went again to a third party.

LaserMenu
$99.95
MicroLogic Software
6400 Hollis Street, Suite 9,
Emeryville, CA 94608
(415)652-5464

This 66 K RAM-resident utility intercepts the output of your application and prepares it for the printer. If your application does not support the laser printer, it probably does support one of the dozens of printers that *LaserMenu* emulates. *LaserMenu* will convert your application's output for you.

My wife is devoted to her copy of *WordStar 3*. It is now five years old, and it certainly does not support the laser printer. It does support the Epson FX-80. I had *LaserMenu* emulate the FX-80. Voila! For the first time, the old *WordStar* would drive the laser printer.

There is a lot more to this program than emulation. It creates the boxes, lines, and shaded areas that the laser printer can print. It comes with prerecorded macros, and it allows you to record others for your own use, and then save the setups in a setup file. You can switch between setups by popping up *LaserMenu*'s menu and making a few choices. It has context-sensitive help, on-line. It says it will control soft fonts for you —a feature I did not test because I did not have any around. It is, all in all, a very nicely built printing appliance. If you are baffled by the H-P commands and end up using the printer as a very expensive typewriter, try this program.

Grappler LS/LQ

So you took the plunge and bought a Macintosh. You've made the switch, and you love it, but there is one problem.

Before you made the switch, you tried to achieve a full graphic environment on a DOS machine by buying a laser printer. Now you have a decent graphic printer for a DOS machine that does graphics only awkwardly, and a graphics computer that takes a *very* expensive PostScript printer. It seems that someone could make an adapter that would let a Mac use a cheaper DOS laser printer.

Well, someone has. The Orange Micro people have been making sturdy, serviceable printer adapters for a long time. They have produced another winning pair:

The Grappler LQ $149
The Grappler LS $129
Orange Micro
1400 N. Lakeview Avenue
Anaheim, CA 92807
(714)779-2772

These two adapters are for parallel and serial printers, respectively. Both come with cables. The LQ has internal electronics to convert the Mac printer output to parallel. The LS is serial, and needs no electronics.

Orange Micro has used a collection of tricks to make a laser printer print Macintosh output. They have supplied Bitstream fonts that allow you to print lookalikes of Helvetica, Dutch, and Courier. The fonts are scaled to let the laser printer produce output at 288 dots per inch. Additional fonts are available from Orange Micro and from other vendors. You also get 288 dots per inch with programs like *MacDraw*.

It is not a perfect solution, though. It mixes high-resolution fonts with coarser "best-try" fonts if the latter fonts are not provided at high resolution. The result can be disconcerting. And it is not a PostScript printer, so it probably will *not* work for desktop publishing applications. But you can obtain laser-quality typefaces and many laser-quality graphics using a $1600 DOS laser printer with your Macintosh. If you are planning to depend on Grappler LQ to use with a specific program, you might want to consult with Orange Micro before you buy. If you have a DOS laser printer in-house, this program will let you use it with your Mac. ■

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It turns out that the basic LaserJet is nothing but a fancy letter-quality printer. You get a small selection of fonts, too little memory to do a full page of graphics, and an impenetrable control language. I needed help, and I went seeking it in the third-party market.

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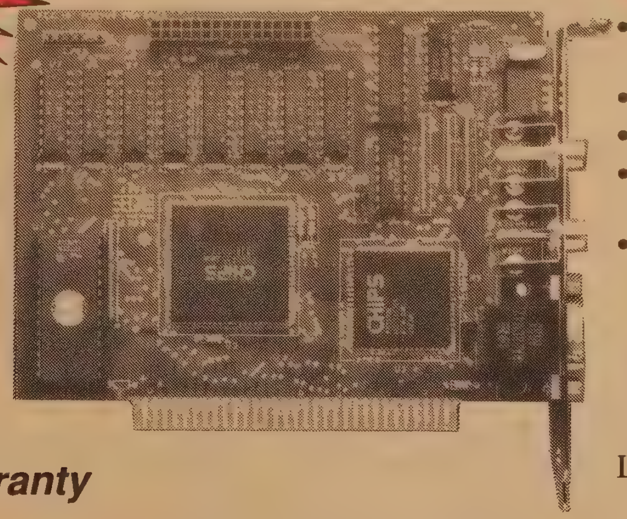

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The Altima One Laptop: AT-Class Power To Go

By Ed Kahn

The Altima One is powerful, flexible, and a real bargain at its introductory price of $2,699.

The laptop market is exploding. In 1987 there were about 350,000 laptop units sold, but projections indicate that by 1991 the number could grow to over two million.

With such a growth trend, it's not difficult to understand why a number of new players will try to get into the act by offering competition to NEC, Zenith, and Toshiba, who still dominate this market—often considered a niche within the personal computer field. One such new entry is Altima Systems, Inc., out of Concord. Their first entry, the Altima One, bodes well for their future.

Altima was started by Go Sugiura, who previously headed Amdek Corporation. With a broad background in the computer industry, he obtained sufficient capitalization to begin this new business and coordinate the design of a bold new laptop.

The machine he designed is really targeted to a specific market that values powerful portability more than the ability to work as you wing around the world. What Altima has come up with is a super-powerful computer with more power at a lower price than you could imagine. It has to be the bargain of the year at its introductory price of $2,699—including a carrying case and *Sidekick Plus*. For an extra 50 bucks they will throw in *LapLink III*, the newest and most powerful easy-to-use upgrade of Traveling Software's transfer utility program.

Features

The Altima One is an 80286-based machine running at 16 MHz. This clocks out to 15.9 on the *Norton Utilities* scale. Unlike the portables that are working the other end of the market by staying as small as possible, Altima tried to get as much power and flexibility as they could into a 15-pound machine that you can easily carry to and from your car. The result is a computer that you can use all the time. Although there is no built-in portable power supply, they will have an external battery pack available by the end of summer for $199.

The real emphasis has been placed on not compromising the basic computer. The removable keyboard has all 101 keys and as good a feel as any I've used. Caps Lock, Scroll Lock, and Num Lock are shown by LED indicators. You can work all day on this machine and not look forward with every click of the keyboard to the time when you can get back to your desktop unit. The keyboard has feet so you can adjust the angle for ease of typing. The unit itself also has feet so you can type comfortably if you leave the keyboard on the unit. You also have the option of attaching any AT-style keyboard through the external port they provide.

Another indication that the designers have really tried to give you a superb product: unlike any other laptop vendor I've encountered, Altima includes a Microsoft-compatible two-button mouse. They have designed a small storage compartment to the right of the screen just large enough for the mouse.

The display is also a winner. It measures 10" diagonally and offers a crisp black on paper-white. Although it looks like an EGA display and has a resolution of a full 400 lines, in fact it is CGA with double scanning. The result is unlike any CGA display I have ever seen. There really is no compromise in ease of use for prolonged periods. The screen controls include the usual contrast and brightness dials. There is also a switch that allows you to reverse the video image in order to get a white on black if you prefer.

If you choose to use an external monitor, there is, of course, the appropriate adapter port. You can use either a monochrome, EGA, or CGA monitor. Once again, Altima has thought things through pretty well. I find many portables that I could work with for a long time, but in the end I have to knock them out of consideration because with a color monitor they give you a CGA display, and I can't work with text in CGA. But Altima has designed this so that it will output text to an EGA monitor, even though the graphics will be CGA. If you prefer a monochrome monitor, you can get real underlining and such. The details of disk and modem operations are revealed through LED indicators located just below the screen.

Unlike the portables working the other end of the market by staying as small as possible, Altima tried to get as much power and flexibility as they could into a 15-pound machine that you can easily carry to and from your car. The result is a computer that you can use all the time.

But there's lots more. The basic unit includes a 20 Mb hard disk with a 27 millisecond access time, as well as a double density 3.5" floppy drive. You can buy an external 360 K 5.25" drive for $249.00. This drive is a generic unit that connects through the parallel port. Also included is a 2400 baud Hayes compatible modem.

The Altima's standard configuration includes a megabyte of RAM, expandable to 5 Mb. The expansion is set up so you can either add 1 Mb ($399) or 4 Mb ($949), but nothing in between. The difference is whether you use 256 K or 1 Mb chips. You can either install this memory yourself or have Altima do it.

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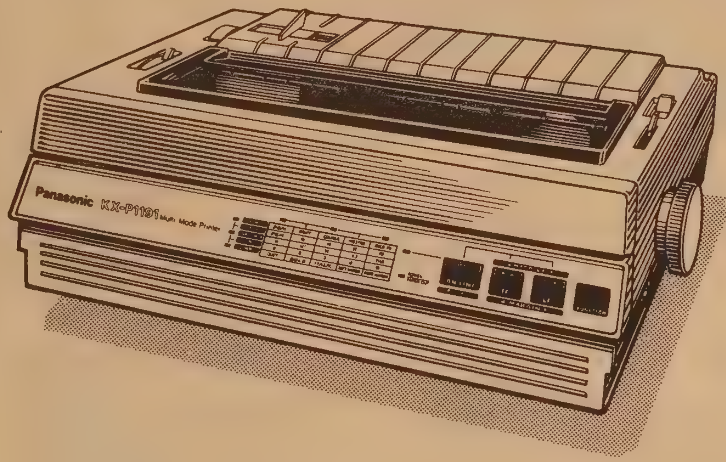

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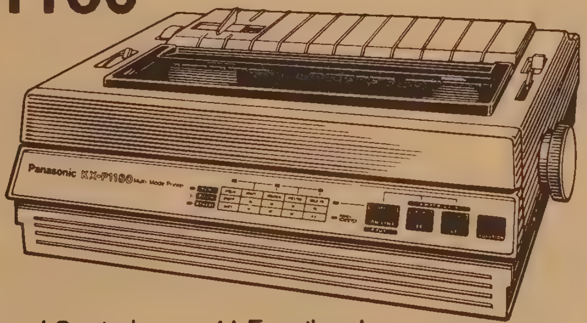

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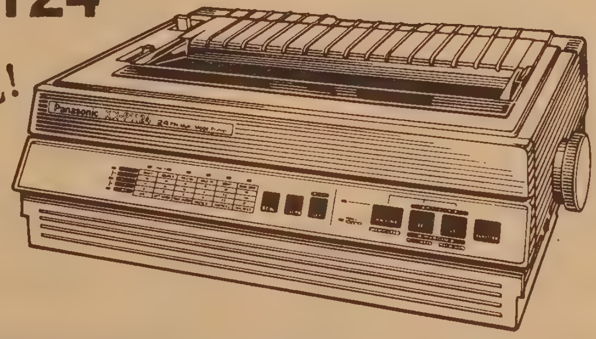

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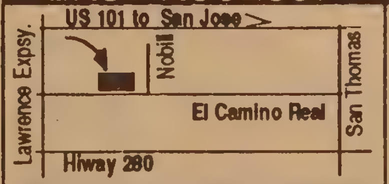

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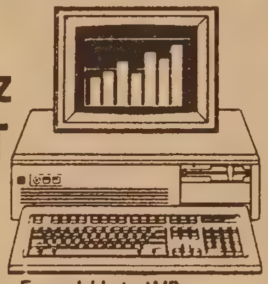

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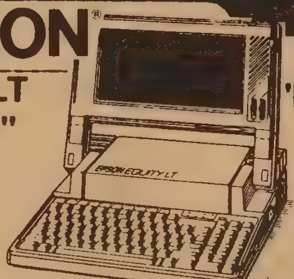

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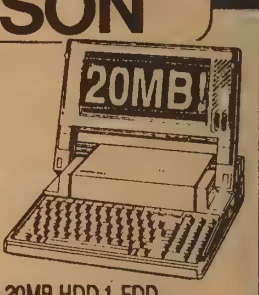

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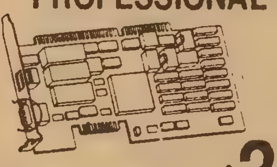

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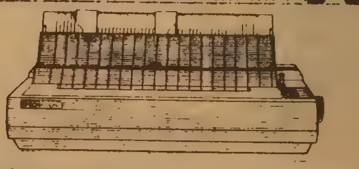

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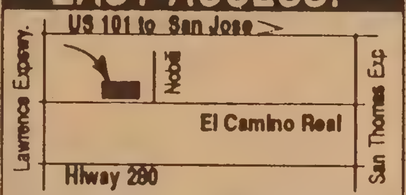

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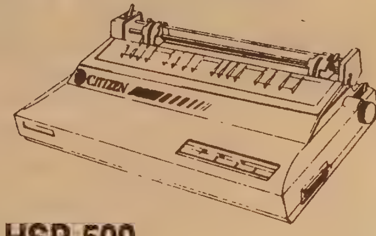

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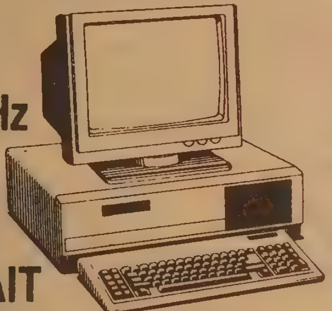

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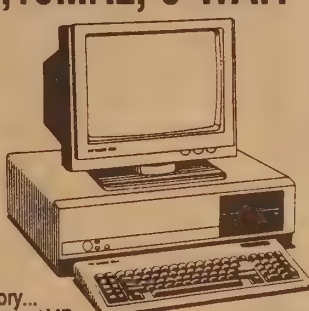

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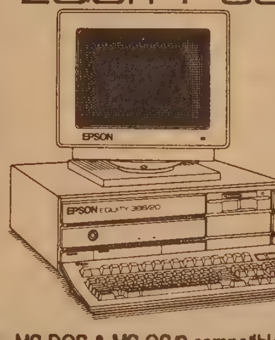

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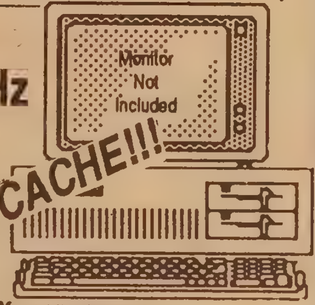

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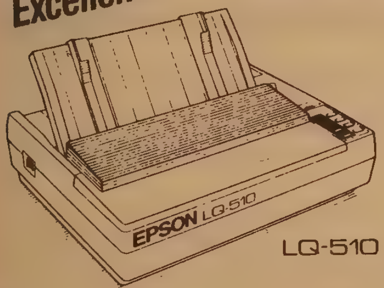

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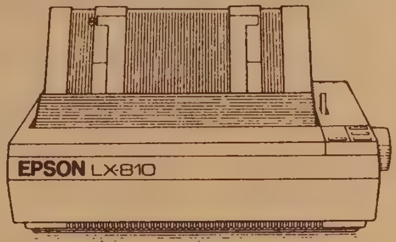

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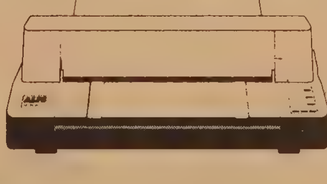

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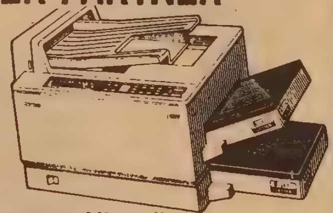

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This extra memory, as well as the megabyte that comes with the unit, is configured as EMS 4.0. This means you can run any of the programs that demand expanded memory. For further flexibility, Altima has designed the computer with a single half-card slot that will accommodate any 8-bit XT card. With graphics, memory, and modem built in, you can further customize your system with this slot.

The overall appearance of the unit is a bit larger—15.7" X 11.8" X 3.9"—than other laptops. I found the system so well designed that the added size seemed worth it. This machine really comes close to a desktop unit.

Altima provides both a serial and parallel port. Next to these ports are also a reset button and a set of dip switches that allow you to configure things like the use of an external monitor and the activation of the serial port. Everything works perfectly.

Altima And DOS 4

The Altima One is the first laptop I have seen that comes with MS-DOS 4.0 or 4.1. It turns out that these two Microsoft versions are the same; here is the story, as I get it. When IBM came out with their PC-DOS 4.0, it was filled with bugs. A few months later, Microsoft released their 4.0, which had no bugs. Soon thereafter, IBM came out with their PC-DOS 4.1, which had the bugs fixed and was equivalent to MS-DOS 4.0. So, to avoid confusion, Microsoft changed their 4.0 to 4.1. So what you get with the Altima is the new DOS, whatever number it has.

I have mixed feelings about the new version. While there are obviously advantages in terms of using hard disks beyond 32 Mb, the new DOS takes up more of the valuable 640 K RAM. Altima tells me that if you want, you can install an earlier DOS and regain the space. But 4.x does also include DOS Shell, an alternative to other shell programs on the market, some of which do not work with the new DOS unless you specifically get versions that are designed to work with the new operating system. Aside from DOS shells and other programs like Norton's unerase program that call on the directory structure, software generally works fine on the new DOS.

Etc.

The only criticism I have is the ease with which the built in-handle moves. On my unit—admittedly a very early production model that probably would not be sold—the handle binds unless you have the right and left side lined up exactly right. This is merely an annoyance, and has nothing to do with the functioning of the machine.

The documentation that comes with the Altima One is brief, but extremely clear. The machine comes ready to go, with installed autoexec.bat and config.sys files. This means that a novice does not have to spend time formatting the hard disk and setting up the machine. Changes in configuration are easily handled through a setup program. The documentation guides you through all of the necessary steps.

And finally, Altima gives a one year limited warranty covering parts and labor. (The Altima One, $2,699, Altima Systems, Inc., 1390 Willow Pass Road, Suite 1050, Concord, CA 94520, (800)356-9990.) ■

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Stop Squinting At That Screen

The number one complaint of laptop users is how difficult it is to find the cursor. The nature of LCD displays is that a small cursor is hard to find, especially when you move it rapidly.

My own preference has always been for something a bit larger than the quickly blinking cursor that's standard with all PC compatible computers. Over the years there have been quick fixes on bulletin boards that alter the way the cursor looks, but now there is a program devoted to this. *No-Squint* ($39.95) is a small file that you can place in your autoexec.bat file; the cursor will assume any one of five sizes and blink at a rate anywhere from the standard all the way down to a very slow blink.

This program is the simplest answer to the case of the vanishing cursor. It isn't guaranteed that you will never have cursor problems again, but it is possible that if you work primarily with text your cursor problems will be a thing of the past. Ken Skier, who designed the program, tells very clearly in the literature that comes with the program that there will be problems with the cursor in communications programs. But with that slight limitation, the program works flawlessly. This seems to be the best solution until the laptop manufacturers decide to tackle this problem on a hardware level. (*No-Squint*, $39.95, SkiSoft Publishing Corp., 1655 Massachusetts Avenue, Suite 79, Lexington, MA 02173 (617)863-1876.)

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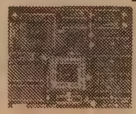

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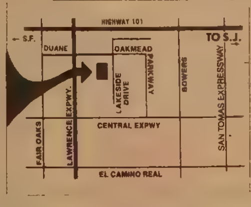

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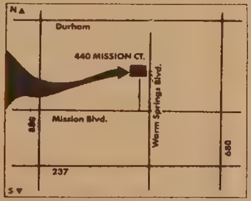

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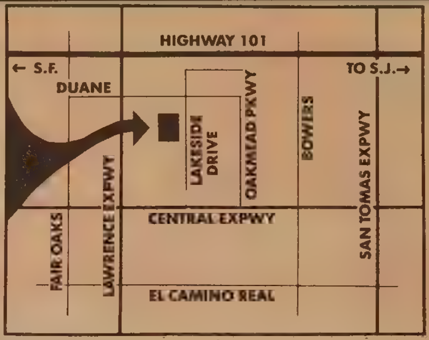

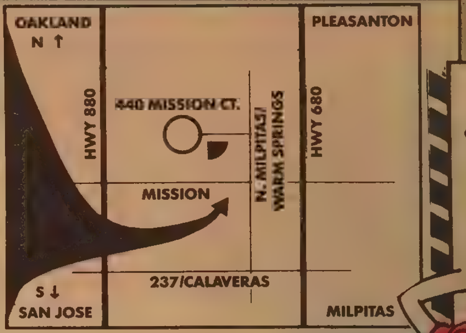

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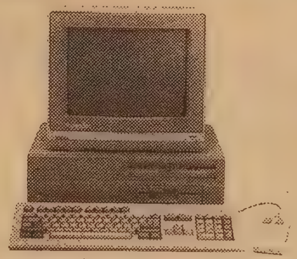

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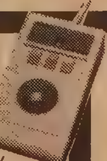

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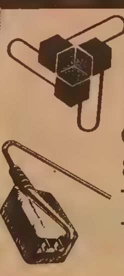

ENHANCE *Cable Technology*

APPLE TALK PHONE NET

Compatible Cable Kit
8 Pin DIN or DB9
Telephone Talk Adaptor,
Terminating Resistor
& 7' Phone Cable

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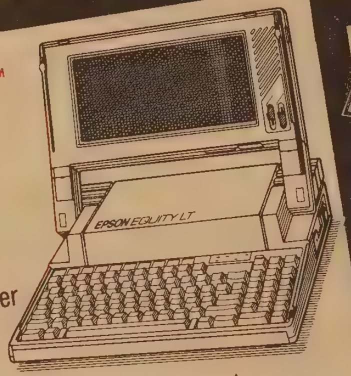
EPSON® EQUITY LT™



LAPTOP COMPUTER SYSTEM

The Equity LT offers the performance of a desktop computer in a portable, battery-powered laptop.

- Powerful NEC V30 microprocessor (4.77/10 MHz)
- 2-3.5" floppy disk drives
- Supertwist LCD screen
- Two internal expansion slots, plus built-in CGA video, serial, parallel and 5.25" external floppy disk drive ports
- 640KB RAM memory with clock/calendar
- 85-Key keyboard with separated numeric pad
- Epson's one year limited warranty

$100 CASH REBATE

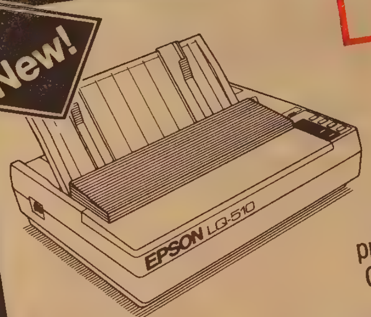
HURRY! REBATE ENDS JULY 31!

$978*

*After $100 Manufacturer's Rebate. In-Store Cost $1078

LQ-510 24 PIN PRINTER

New!



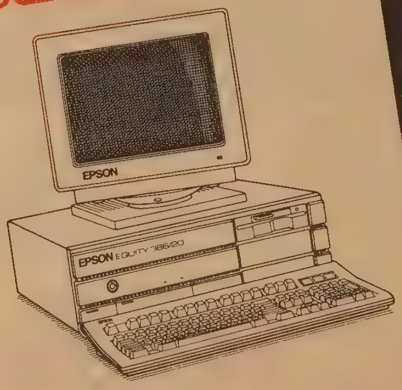
Epson's narrow-carriage LQ-510 provides outstanding value and Letter Quality excellence in a 24-pin printer.

- 24 Pin Letter Quality printer
- Prints 180 CPS in draft mode 60 CPS in Letter Quality mode
- Easy-to-use SelecType front control panel
- Advanced SmartPark paper handling
- Selectable 8K or 1K buffer
- Built-in Epson Roman and Sans Serif Letter Quality fonts

$349

EPSON® EQUITY™ 386/20

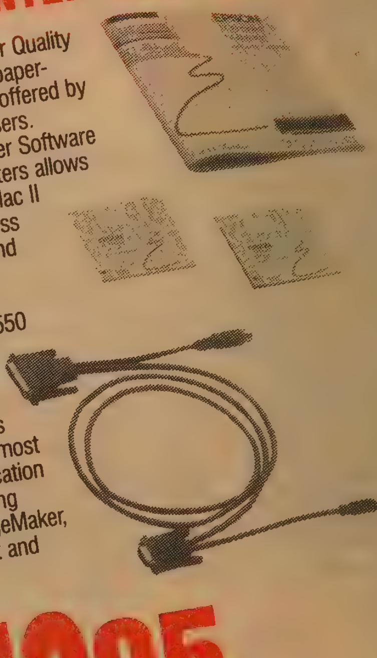
Epson technology brings you the Epson Equity 386/20—a powerful 20 MHz 80386 desktop computer that offers an affordable, total system solution to your sophisticated business needs.



- Powerful 20 MHz 80386 microprocessor
- Standard 1.2 MB floppy disk drive
- 1MB RAM is expandable up to 16MB via SIMMs
- Ideal as a network file server
- 8 I/O slots available
- Epson's one year limited warranty

$2895

MAC LQ PRINTER SOFTWARE



Epson's renowned Letter Quality printing and advanced paper-handling technology is offered by Epson to Macintosh users.

The Epson LQ Printer Software for Macintosh computers allows Mac Plus, Mac SE, Mac II & Mac IIx users access to Epson's reliable and affordable LQ-500,* LQ-850, LQ-950, LQ-1050 and LQ-2550 high resolution 24-pin Letter Quality printers. This printer software is compatible with most Macintosh application software including HyperCard, PageMaker, Microsoft Chart and dBase.

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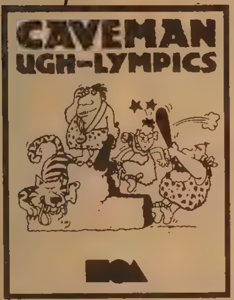
SKATE OR DIE	$\$26^{95}$
KINGS OF THE BEACH	$\$29^{95}$



CAVEMAN UGH-LYMPICS

New for the IBM and compatibles! All-time Neanderthal athletes compete for medals in events that started it all . . . when competition was rugged . . . when clubbing earned medals. (IBM, C64)

SKATE OR DIE

Get radical as you compete in 5 unique events that capture all the action and none of the scars of real skateboarding. This is one of Electronic Art's all time best selling titles. (IBM, CGA, Apple IIgs)

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FOR THE MACINTOSH

Studio/1 offers easy to use, incredible animation for the new or experienced Macintosh user. A full-featured paint program with 300dpi editing, a Postscript quality text layer, 3D perspective, editable Bezier curves, zoom-out editing, and sophisticated resizing and distortion tools. Plus instant animation for presentations, educational demos, animatics, interactive kiosks, or just for fun. Equipped with Hypercard driver for dynamic presentations in Hypercard, or use the built-in animated slideshow to show off your work.

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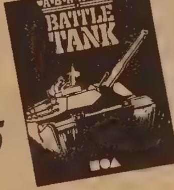

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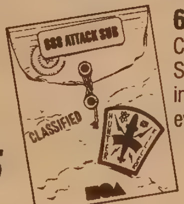

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Command the quieter US 688 Sub, or the faster Soviet ALFA in missions of espionage, evasion, and destruction. (IBM)

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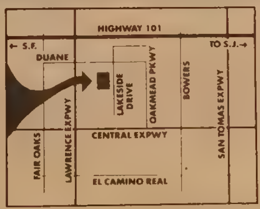

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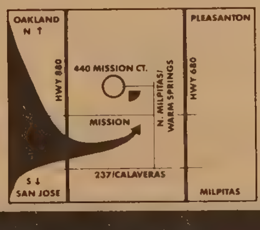

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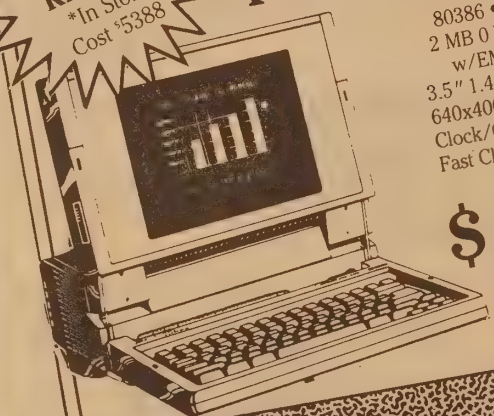

80386 • 3.5″ 28ms 40 MB Hard Disk
2 MB 0 Wait State RAM Expandable to 3 MB w/EMS Extended Memory
3.5″ 1.44 MB Floppy Disk • MS DOS 3.21
640x400 Page White 10.5″ Backlit LCD
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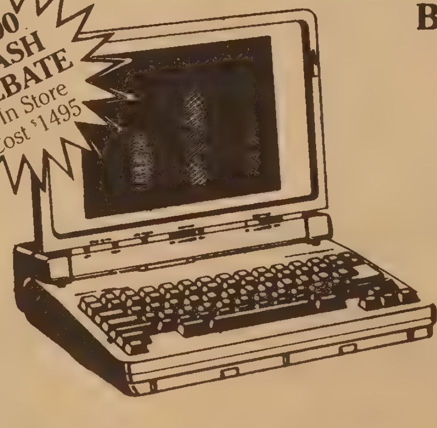

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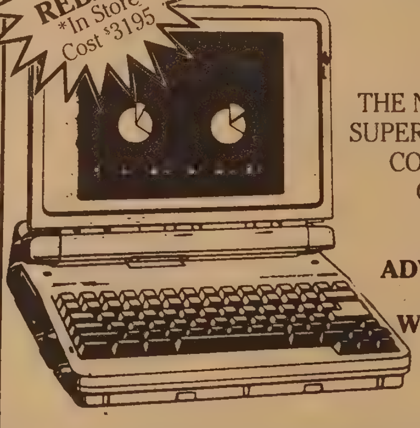

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THE NEW BATTERY DRIVEN SUPERSPORT 286 HELPS YOU CONQUER THE LIMITS OF YOUR OFFICE.

ADVANCED AT DESKTOP PERFORMANCE WHEREVER BUSINESS TAKES YOU

6/12 MHz 80C286 0 Wait State • 20 MB Hard Disk
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Stand-Alone Modem
100% Hayes Compatible
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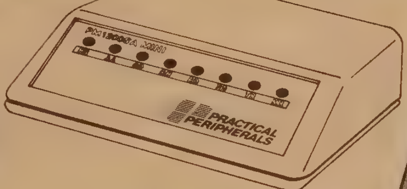

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FREE! Modem Cable
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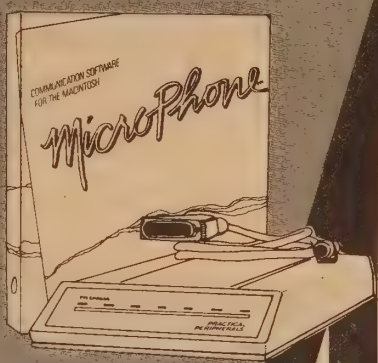
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ProComm 100% Hayes Compatible • ProComm Software
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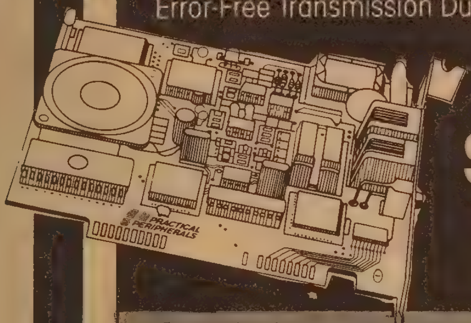

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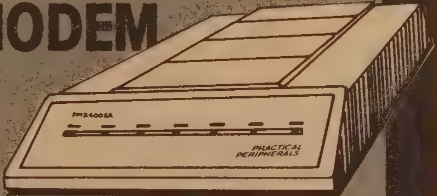
Data Input Rates
Up To 9600 BIOS!
Hayes Compatible
ProComm Software



PM2400SA
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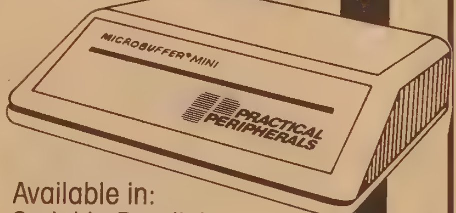
Compact Stand-Alone
Printer Buffer



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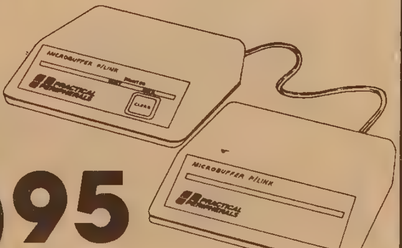
Put Your Printer Up To 7000 FEET Away From Your Computer. Use The Buffer w/32K Up To 512K Includes Transmitter & Receiver



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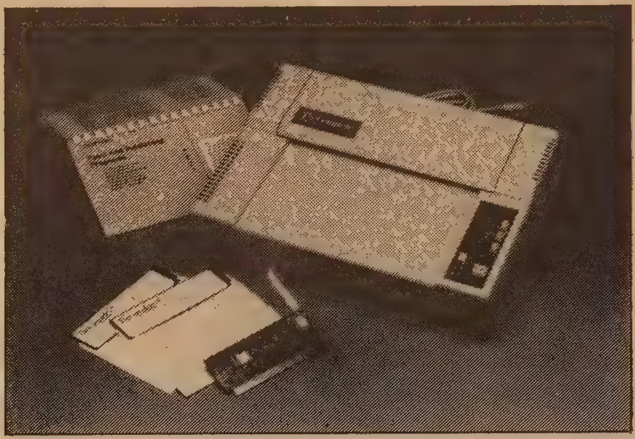

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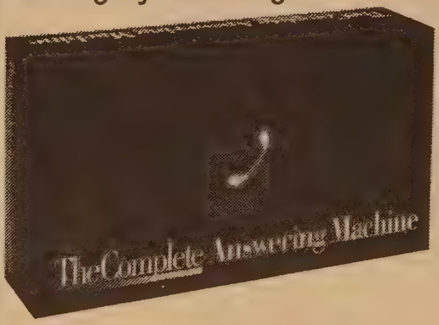

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Put the performance of a sophisticated voice mail system in your PC.

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TheComplete Answering Machine™

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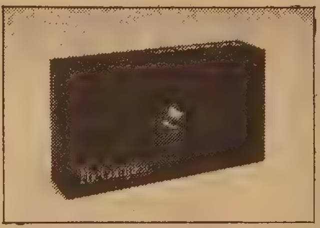

Without interrupting your regular work you can have the FAX inside your PC and for a fraction of the cost of a stand-alone FAX machine

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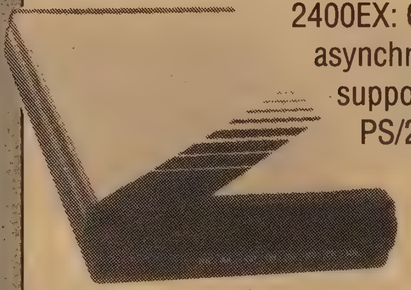

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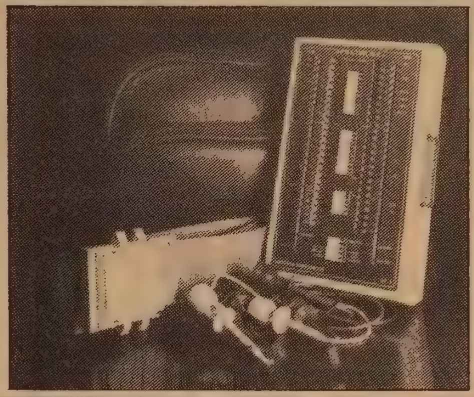

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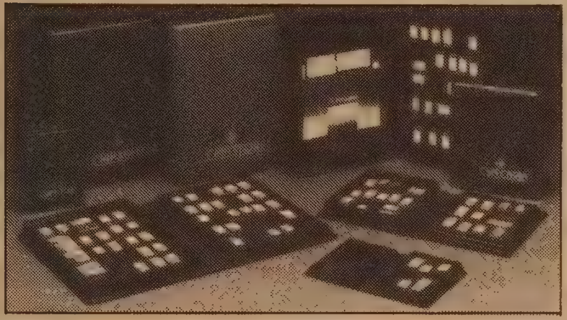

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ChipSafe™	7″x10″	70+ 24 pin DIP ICs	$16.95
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5 YEAR WARRANTY BOXED
intel MATH COPROCESSOR

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80C287A $359

80387SX $399

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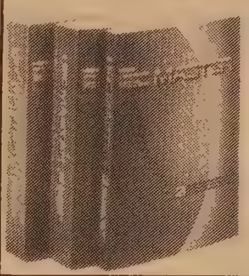
256K-150

120 NS	80 NS
$4.49	$6.69
100 NS	60 NS
$5.39	$7.99

$4.29



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3 VOLUME SET

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1 Meg x 9-120	$179
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SOLDERING STATIONS

EC1001

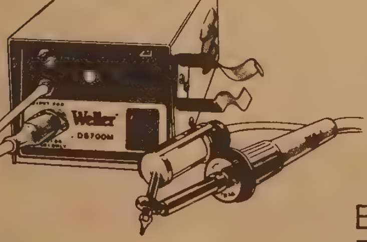
EC3001

- User friendly - soldering pencil stand connects to right or left side of unit
- New compact, elegant design
- Self-feeding reservoir
- Tip tray stores six extra temperature sensing tips
- New cord strain relief extends cord life

EC2001

EC4001

- User friendly - soldering pencil stand connects to right or left side of unit
- New compact, elegant design
- Accurate LED variable temperature display
- Self-feeding reservoir
- Tip tray stores six extra temperature sensing tips
- New cord strain relief extends cord life



DS700M
Desoldering Station
- Lightweight, compact, reliable, portable
- LED signal display
- Interchangeable, self-sealing, tapered tiplets
- UL approved transformer

QUANTITY DISCOUNTS AVAILABLE

ESD VERSIONS IN STOCK

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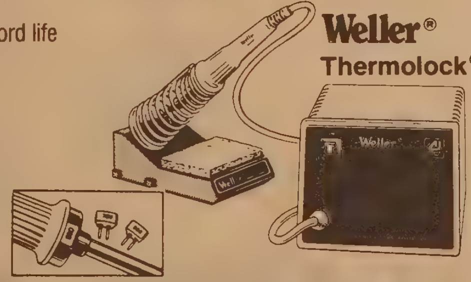

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WTLE, WTL24, WTL120
- Calibrated key fits into handpiece to insure temperature of iron tip within 10°F.
- Zero voltage circuitry to eliminate switching transients on iron tips which may interface with user production
- Unique tapered, self-locking replaceable tips enhance response time

2 MEGABYTE LOW PROFILE 1 MEGx8-120

MICRON
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1 MEG

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NS16550AN
SERIAL COMMUNICATION VART

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PIEZO ELECTRONIC
BUTANE 1300°C
2500°F ONE SECOND
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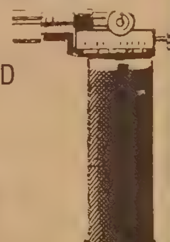

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GB2001

Panasonic

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KX-F100

$988

This compact, space saving design incorporates everything you need to run a business from your desk. A Full Function telephone for calling in or out or record messages on the answering machine when you are out of the office. Also, the convenient copier allows you to copy 8½x11 inch documents. But the best part of all is the Fully Functional Facsimile for sending or receiving important documents

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FAX PHONE & COPIER

- LED Display
- Auto/Manual Reception
- Print Activity Journal

NEW LOW PRICE

Model 1200

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UF-155

PANAFAX 155 FAX PHONE & COPIER

- Built-In clock
- One-Touch & Abbreviated Dialing Memory
- Fine/Super Fine Resolution
- Multi-Station Transmission

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SHARP.

FAX/PHONE WITH CONVENIENT AUTO DIALING CAPABILITY AND HALFTONE TRANSMISSION

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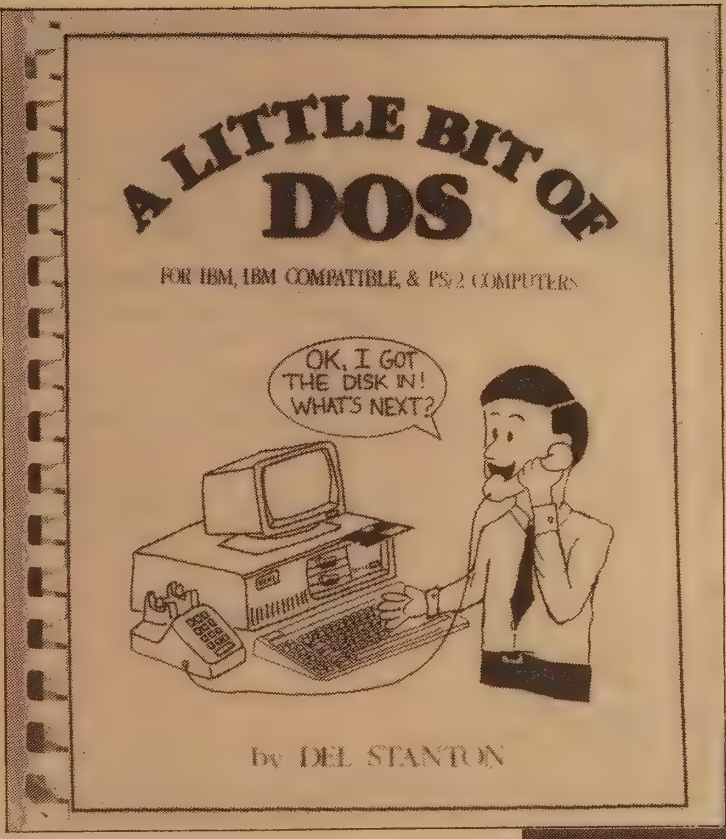
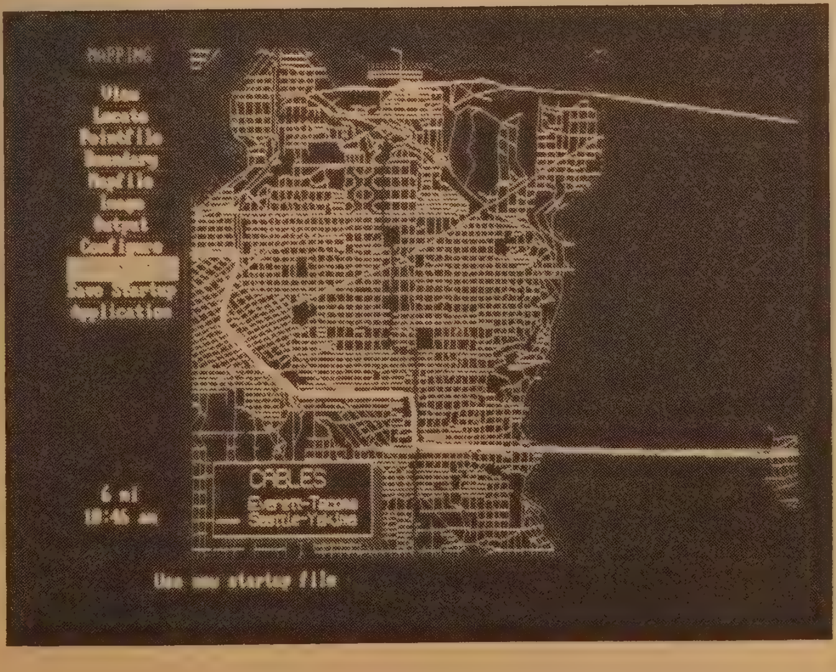

A LITTLE BIT OF DOS
FOR IBM, IBM COMPATIBLE, & PS/2 COMPUTERS
OK, I GOT THE DISK IN! WHAT'S NEXT?
by DEL STANTON

A Little Bit Of DOS is a new text for beginning DOS users. The book is designed for those who want to learn enough about the standard PC operating system to be able to use it at a basic level rather than master it completely. It is illustrated throughout with cartoons that explain essential DOS concepts. If you think booting your PC means giving it a swift kick, and you don't know the difference between a batch file and the A: drive, *A Little Bit Of DOS* can help you get started in the DOS world. Del Stanton, PO 1120, Burbank, CA 91507. (818)840-0767.

GoScript 2.1 Offers New Features

GoScript 2.1, a software printing utility for the PC and PS/2 that enables non-PostScript printers to print PostScript language files, offers three new features: print-to-disk capabilities, faster bit-map image processing, and the ability to save and restore bit-map images. *GoScript* 2.1 also supports GoFonts, LaserGo's new library that will offer over 2000 typefaces. *GoScript* is offered in two editions—the first includes 13 high quality scalable outline fonts; the second edition is *GoScript Plus*, which includes 35 outline fonts. Both come with step-by-step instructions for use with many popular programs including *Word*, *WordPerfect* 5.0, *PageMaker*, and *Ventura Publisher*. 640 K of RAM, a hard disk with 1.5 to 3 Mb of free memory, and MS-DOS 3.0 or later are required. ($195/$395) LaserGo, Inc., 9235 Trade Place, Suite A, San Diego, CA 92126. (619)530-2400.

MapInfo 4.0 Weds Maps With Databases



MapInfo combines the power of computerized mapping with the information sorting and analysis capabilities of a database. The program can use data either in a user's existing databases (*dBASE III Plus*, *dBASE IV*) or in any ASCII file. Through *MapInfo*, users can easily manipulate locations identified either by street address, zip code, city, state, county, census tract or, by virtually any geographic information. *MapInfo* also supplies computer maps for thousands of cities across the US. These maps include names for every street, river, and bridge, as well as address number ranges for every block and side of the street. State and national maps are available with county boundaries, cities and towns, zip codes, and state and interstate highways, and a variety of national boundary files. World maps are also available. In addition, users can create their own maps using a keyboard, a mouse, or a digitizer. *MapInfo* allows you to

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($750) MapInfo Corporation, 200 Broadway, Troy, NY 12180. 1-800-FAST-MAP.

MAC @ WORK

IN THIS ISSUE...

PC To Mac And Back: Designer Graphics
By Lenny Bailes 108
Continuing our series on converting graphics files, one of the more problematic elements of Mac-PC connectivity, Lenny Bailes discusses helpful utility programs and the surprising conversion capabilities of *Ventura* and *PageMaker*.

Mac-PC Connectivity *By Robert Beauchamp* 118
Microsoft *Word* 4/5 on Mac and PC.

QuarkStyle *By Tony Rocco* 124
A great package for desktop publishing on a budget.

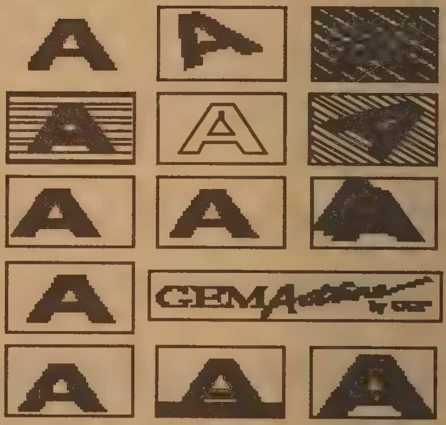
BMUG *By David Morgenstern* 130
System 7.0, the nuPrometheus League, and other excitement.

HyperCard *By Birrell Walsh* 134
Tips for creating buttons.

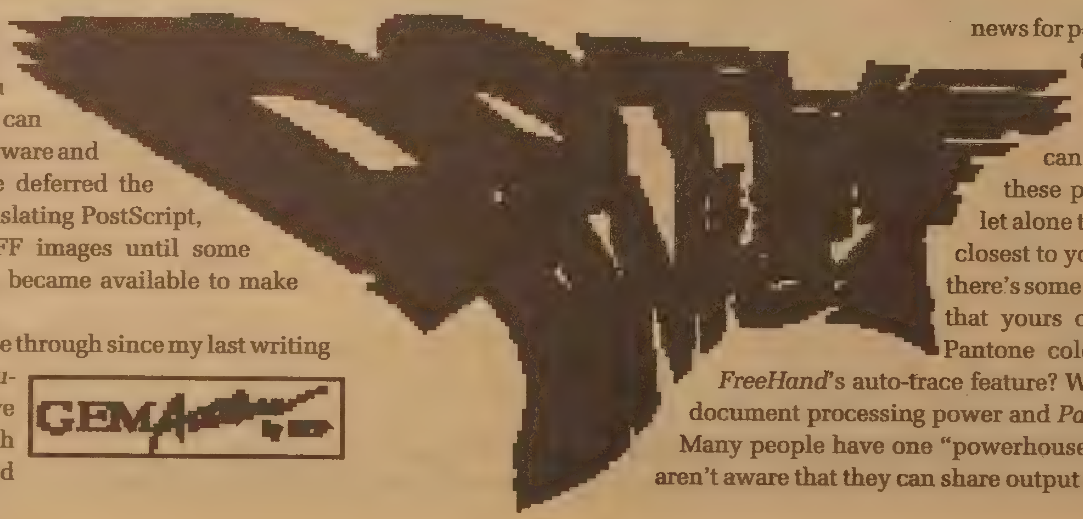
PC To Mac And Back, Part II—

Designer Graphics

By Lenny Bailes



These graphics, created on the PC, were converted to MacDraw PICT.



Last time we looked at PC-Mac connectivity (January 23, 1989, #52) we showed you how 256-color bitmap images can be shuttled around with shareware and public domain software. We deferred the issue of transferring and translating PostScript, vector art, and scanned TIFF images until some "ambassador class" software became available to make life easier for us.

Some connectivity has come through since my last writing on this subject. *Lumena*, *AutoCAD*, and *FreeHand* have joined the other PC-Mac switch hitters this year. This is good news for people who deal with output from these giants as an end product.

The problem most computer users face, though, is they can't afford to purchase many of these programs on even one platform, let alone two. You pick the one that seems closest to your needs and settle for it. Often there's some trick the "other program" can do that yours can't. What if you want to do Pantone colors with *Illustrator* but prefer *FreeHand*'s auto-trace feature? What if you want both *Ventura*'s document processing power and *PageMaker*'s portability?

Many people have one "powerhouse" program on their system, but aren't aware that they can share output produced by others. Work done

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with various competing tools represents time spent and energy invested. Although we are constrained from duplicating the tools, we should be able to pass the output around and liberate the energy stored up on each other's hard drives!

HP Drawing Gallery users and *MacDraw* mavens have more in common than they realize. On the off-chance that they should meet, it turns out that their HPGL plotter files and PICT drawings may actually be exchanged and used on each other's computers. *GEM Artline* and *MacDraw* are on a chain linked by *Ventura Publisher* (which can print a *MacDraw* graphic newsletter on an HP LaserJet). *WordPerfect 5* users can take output from almost any Mac or PC program, including *Image Studio* and *Illustrator 88.*

Sometimes graphics portability can be accomplished just by moving files from the Desktop to DOS. Other times you can use inexpensive conversion utilities as a bridge. Translating files isn't as automatic as it should be yet, but you can do it by learning a few basic concepts about the nature of your stored images.

PageMaker: Special Considerations

The most common graphics transfers are those made between one version of *PageMaker* and the other.

Here's a simple tip if you're adventurous—D.I.A. Cables in San Francisco sells a custom Mac-to-PC cable for under $30. Just run a communications program at each end and you've got a network. Files can be transferred at 19,200 bps. I was amazed the first time I saw this done at a large industrial graphics company. I was so inspired by the sight that I discovered an even cheaper way to move files across the gap. An old ImageWriter printer cable equipped with a 25-pin gender changer will also pinch-hit for expensive network software. You plug the round end into the Mac modem port and the other end into the PC's RS-232 serial port, run two communications programs, and you're on line. (Use a "direct" gender changer, not one that reverses the pin-outs as a "null modem.")

When you work with *PageMaker* files, which have been sent over by modem or direct-cable connection, you can get some mystifying error messages on the PC. Macintosh programs may refuse to acknowledge that your files even exist. The cardinal rule to remember about this is not to use the MacBinary option on the Mac for file transfers of any *PageMaker*-related files. *PC PageMaker* can't read MacBinary file headers. When you send publication files or linked graphics from a Mac to a PC, you must disable the MacBinary option on your communications software.

Two Mac programs, *MicroPhone* and Microsoft *Works*, allow you to do this successfully. *Versaterm, Versaterm Pro, Red Ryder,* and some others simply refuse to send binary files unless you put an X in the MacBinary box. If you have to utilize uncooperative software, you can still remove the Mac file header once you're on the PC side. *Decap* and *Mac2VP* are two shareware PC utilities originally written to strip out MacBinary information for *WordPerfect* and *Ventura Publisher*. They work for *PageMaker*, as well. (*The Graphics Transformer*, discussed in the main article, will also strip out MacBinary information for TIFFs and *MacPaint* only.)

On the Macintosh side, your files need to include the correct filetype information for applications to recognize them. Frequently, files transferred from the PC show up on the Desktop with "Text" icons, which are not what *PageMaker* and *Ilustrator* look for. You can fix this with *ResEdit*; click on Get Info, and for *PageMaker* 3.0 publications set the filetype to "AB3". The creator is "AD3". TIFF filetype should be "TIFF". Macintosh EPS files are "EPSF". "PC Preview" EPS files are "EPSP." As soon as you change the filetypes from "TEXT", your Macintosh programs can see and load the transplanted PC files.

If you move PC *PageMaker* files in a controlled situation (under TOPS or *MacLink*), you may find that they pop over without these problems. When you load files into Mac *PageMaker*, though, there may be grey boxes where your illustrations were. The rule of thumb for this is: if your graphic file was 64 K or less, a facsimile of it is incorporated into the publication (.PM3) file. You'll see the image on-screen on the Mac and the graphic will be printed. *PC Paintbrush*, Microsoft *Paint*, and other bitmaps actually cross over, if they're small enough in size.

If your graphic is larger than 64 K and a compatible bitmap (TIFF, *MacPaint*), *PageMaker* will link it separately. Large *PC Paintbrush* bitmaps aren't linked. If the graphic is a vector file (*PC Plotter* file, Lotus PIC) you may see a "screen facsimile" bitmap, but the file won't be linked. You won't get a true vector printout of Lotus pictures or plotter graphics, though Mac *PageMaker* will print the "screen facsimile."

Going from Mac to PC *PageMaker*, PICT and Mac EPS files are not linked.

Background

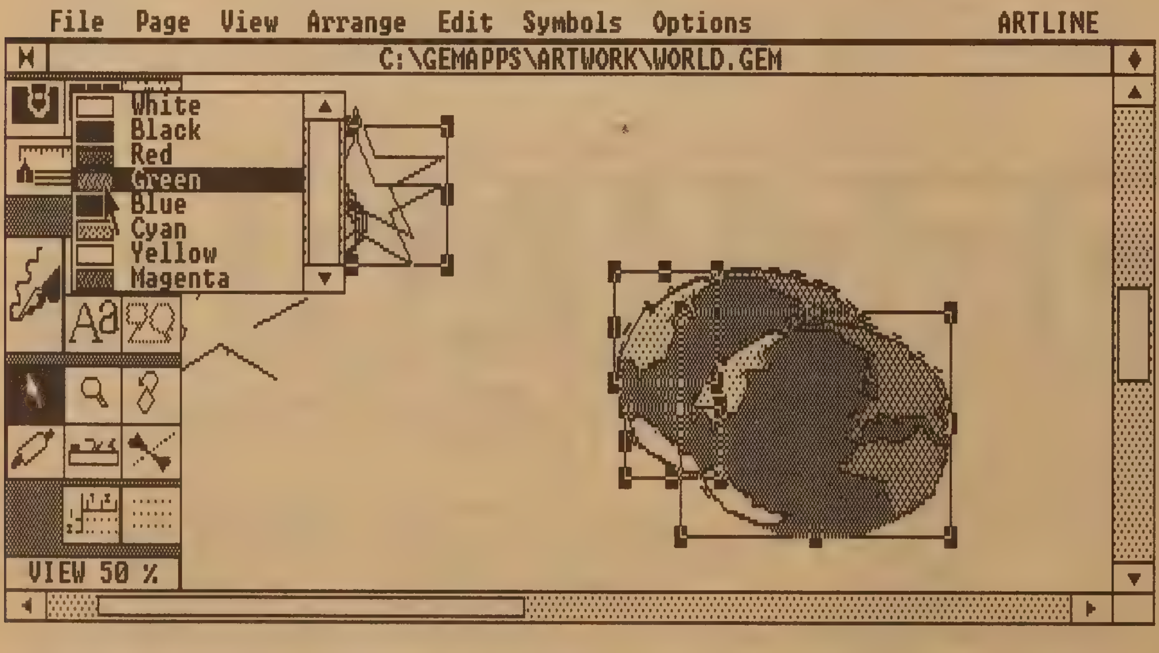
Designer-quality artwork can usually be stored on Macs and PCs in two widely used formats, Encapsulated PostScript (EPS) and Tagged Image File Format (TIFF). This system was developed by Adobe, Aldus, and Microsoft, companies that dominate the graphics world on both computer platforms. EPS was developed by Adobe for use with PostScript printers and drawing programs. TIFF is a container format used for scanned images in multiple colors or artwork with several layers of grey shading.

Unfortunately, software companies differ in their degrees of technical sophistication. As a result, even though most high-level software deals in "EPS" and "TIFF", you may experience file incompatibility from program to program. Rather than shake our heads and give up when our programs refuse to load an image, we may overcome some of the problems, if we understand what's going on.

For instance, TIFF is a format that can include black and white images, grey-scale images, and color artwork. On the Macintosh side, most software will warn you about this. On the PC side, *PC PageMaker* and *Ventura* do not understand color TIFFs. So if you want to use TIFF files on these publishing programs, don't save them in color. (Aldus has recently marketed a special color upgrade for *PageMaker* on the Mac. It must be purchased and installed separately.)

Some software can handle black and white images, but chokes on "grey-scale" TIFFs. (*The Curator* on the Mac and most PC packages other than *PageMaker*, *Ventura*, and *WordPerfect 5* don't handle grey-scale images.) For those other programs, save your scanned artwork as a "black and white" TIFF. Some software may be able to produce a grey dither that simulates the grey levels that scanners can do. Dithering makes grey shades by mixing pixels as on or off only. True "grey-scale" pictures allow each pixel to have 4 to 16 levels of contrast.

An Encapsulated PostScript file is a list of programming instructions to be sent to a PostScript printing device (usually an Apple LaserWriter or Linotronic machine). A basic EPS file contains only those text instructions and can't be sent to non-PostScript printers. "Viewable" EPS files are a more recent development. They consist of a combination of PostScript instructions and a special screen image. "Viewable" EPS files can be looked at on-screen and also converted into something printable on an ImageWriter, Epson, or HP LaserJet. On a PC, viewable EPS files include bitmap TIFF images. On a Mac, the viewable EPS includes a PICT file.



PC graphic converted to MacDraw file and imported into PageMaker for this page layout.

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Creating Vector And Previewable EPS Files

You can make almost any graphic created on either the Mac or the PC print on the other side by converting it to a compatible format. *The Graphics Transformer* on the PC and *The Curator* on the Macintosh are two valuable graphics tools for this. Together they will let you create viewable EPS files printable on either system.

The Graphics Transformer, previously called *Reflection*, is distributed by IMSI Software. The program is a licensed remarket issue of a package called *Hijaak*, which is sold on the East Coast by Inset Systems. This is the cheapest and most useful commercial conversion package on the market for PCs. *The Graphics Transformer* converts both bitmap and vector files between the most popular PC image formats (including *PC Paintbrush*, GEM, Microsoft TIFF, CCITT TIFF, *Dr. Halo*, WordPerfect Graphics, AMIGA IFF, CompuServe Graphics (GIF), Hewlett-Packard Printer Language, Hewlett-Packard Graphics Language (Plotter files), Lotus PIC, and Encapsulated PostScript).

The latest version (1.1) can take any bitmapped image and write PostScript instructions for it, making an EPS file. The PostScript instructions can be merged with a TIFF bitmap of any image to become a viewable EPS (which you can see on-screen in *Ventura Publisher* 2.0 or *PC PageMaker*). Batch files are included to make some EPS conversions completely automatic.

The Graphics Transformer also does direct vector-to-vector conversions between HPGL plotter files and Lotus PIC files. The Hewlett-Packard plotter format is available in 16 colors for any PC drawing or drafting application that uses an HPGL driver. *AutoCAD* and *AutoSketch*, *HP Drawing Gallery*, *Harvard Graphics*, *Micrografx Draw* and *Designer*, *GEM Draw*, *Graph*, and *Artline* are some of the applications that can print to this format.

Why should a Macintosh owner care about this? Well, one Mac user, who wanted to incorporate Lotus graphics on his Mac II, has written a utility called *PICturePICTure*. This is an add-on Apple AFE file translator, that reads Lotus PIC files from a Mac disk and exports them in *MacDraw* format (PICT or color PICT2 files).

Now, how about taking a multilayer 3-D design from PC *AutoCAD* and using it in *MacDraw* or *Cricket Draw*? You don't have to buy Mac *AutoCAD* to do this. The PC *Adobe Illustrator* has a conversion utility for *AutoCAD* output, but you don't need that either!

Print the PC sketch from *AutoCAD* to an HPGL plotter file in up to 16 colors, then use *The Graphics Transformer* to make it into a Lotus PIC (you can regulate the pen colors and line widths in the translation). Now send your Lotus PIC file to the Mac over your $15 printer cable, and *PICturePICTure* will make a Macintosh PICT out of it. You don't even have to reset the filetype with *ResEdit* for this one.

While you're at it, you may also want to send over some of the "PC Preview" EPS files you've built with *The Graphics Transformer*. Once you've changed their filetype on the Mac to EPSP, *The Curator* can read and resave them as viewable Mac EPS files. (This trick works for ordinary black and white images only, no grey-scales. To see grey-scale pictures on-screen in both *PageMakers*, use TIFF files if you don't own *Illustrator* or *FreeHand*. *Image Studio*, *Cricket Paint*, and *Studio 8* will all load the TIFFs and generate grey-scale Mac EPS files if you want them. *Illustrator 88* and *FreeHand* 2.0 both produce grey-scale EPS files in either Mac or PC format, but *FreeHand* can only "place" TIFF files as templates. *Illustrator 88* doesn't place TIFFs.)

Ventura Publisher: A Great Conversion Utility

Ventura Publisher owners can get considerable mileage out of their software as a graphics conversion tool. *Ventura* reads most standard PC bitmap and vector formats, and *MacPaint* and PICT files from the Mac. When *Ventura* loads an image, it automatically builds a new file in GEM format out of the base file. If you own other Digital Research products, you can use the GEM files cloned from Macintosh images. *GEM Artline* can add color and PostScript font effects to files produced by *MacDraw* on the Mac. *GEM Paint* can colorize TIFF and *MacPaint* images.

What *Ventura Publisher* 2.0 can do with PICT files is simply amazing. *VP* 2.0 not only handles the graphic elements generated in *MacDraw*, but it matches fonts and automatically scales them to fit within a resized frame (although it will usually convert all typestyles to Helvetica). Import a *MacDraw* file over for *Ventura*, and an H-P LaserJet or Epson will print a faithful rendition of it in any

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scale just as though it were PostScript! (*Ventura 1.1* has some difficulty reading Macintosh PICTs, but the problem is alleviated by a patch from Xerox. Complicated drawings may not be printed with 100% accuracy.)

For best results, use PICTs saved by *MacDraw*. PICTS from other Mac programs, like *Cricket Draw*, will sometimes work if they have been loaded into *MacDraw* and resaved before sending them to the PC. PICTs produced by *The Curator* work if they were originally drawn as vector files. PICTs produced by *MacDraw II* work if all text is Helvetica. The maximum file size *Ventura* can handle is around 50 K.

Further Tips And Caveats

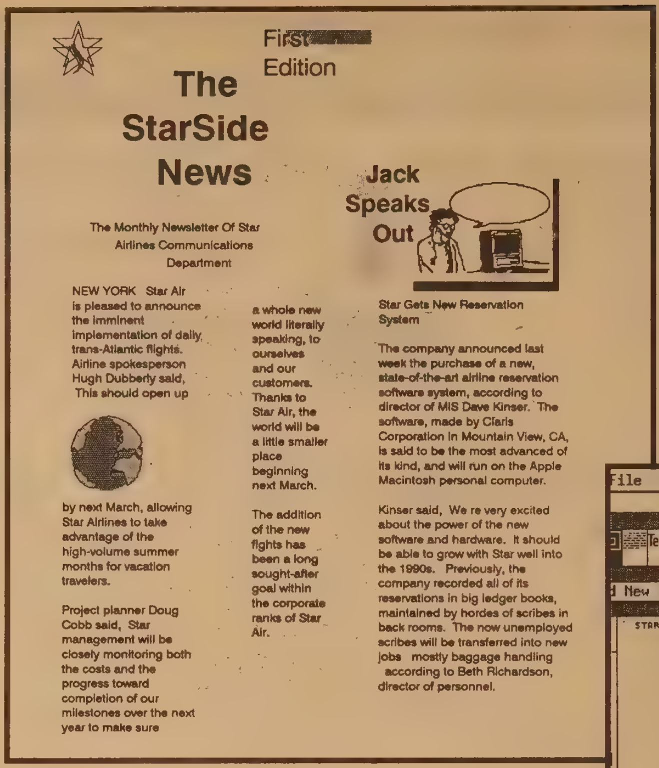
The techniques I've discussed in this article will let you deal with a good many graphics transfer problems successfully. I don't want to negate the necessity for people from MS-DOS and Macintosh software companies to get together and work out some better standards. There are still applications that balk at reading TIFF and EPS output from other applications. It would be of great benefit to end-users if TIFF and EPS became universal standards for either platform.

Some anomalies I've noted:

1. TIFF and EPS files

a) Some programs save TIFF files in compressed formats (many Mac scanning programs and DRI's *GEMScan* for the PC). Remedy: *The Graphics Transformer* will convert CCITT compressed TIFFs to the uncompressed format that most programs need. Save "uncompressed" files whenever you have the option.

b) *WordPerfect 5* wouldn't read the *Studio 8* grey-scale TIFF I tested, though it would load other grey-scale TIFF and EPS files from *Illustrator 88* and *Image Studio*. Electronic Arts tech support tells me that a new release of *Studio 8* will be out soon incorporating Aldus's updated TIFF specs.



First
Edition

The
StarSide
News

The Monthly Newsletter Of Star Airlines Communications Department

NEW YORK Star Air is pleased to announce the imminent implementation of daily trans-Atlantic flights. Airline spokesperson Hugh Dubberly said, This should open up by next March, allowing Star Airlines to take advantage of the high-volume summer months for vacation travelers.

Project planner Doug Cobb said, Star management will be closely monitoring both the costs and the progress toward completion of our milestones over the next year to make sure

a whole new world literally speaking, to ourselves and our customers. Thanks to Star Air, the world will be a little smaller place beginning next March.

The addition of the new flights has been a long sought-after goal within the corporate ranks of Star Air.

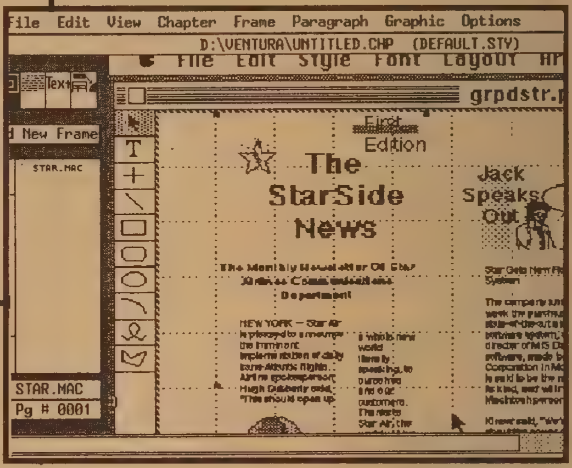
Jack
Speaks
Out

Star Gets New Reservation System

The company announced last week the purchase of a new, state-of-the-art airline reservation software system, according to director of MIS Dave Kinser. The software, made by Claris Corporation in Mountain View, CA, is said to be the most advanced of its kind, and will run on the Apple Macintosh personal computer.

Kinser said, We re very excited about the power of the new software and hardware. It should be able to grow with Star well into the 1990s. Previously, the company recorded all of its reservations in big ledger books, maintained by hordes of scribes in back rooms. The now unemployed scribes will be transferred into new jobs mostly baggage handling according to Beth Richardson, director of personnel.

Newsletter prepared on the Mac in MacDraw, imported and viewed in a Ventura window on the PC.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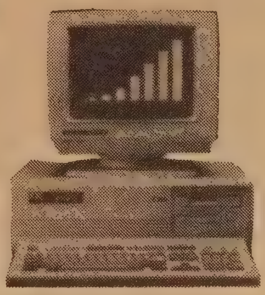

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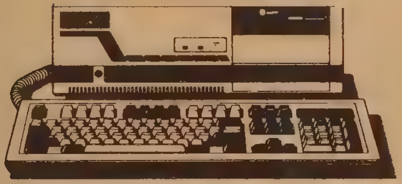

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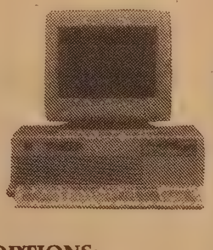

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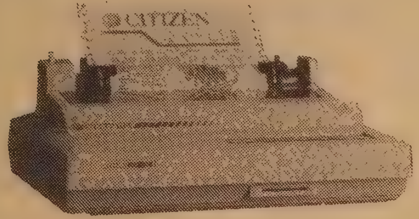

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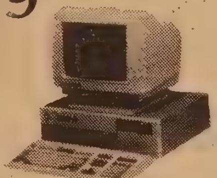

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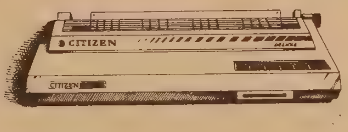

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c) *FreeHand* color EPS files work with *PC PageMaker*, but not with *WordPerfect 5* or *Ventura*. I also discovered that Mac *Illustrator* wouldn't read some EPS files produced by Mac *FreeHand*, although *PageMaker* would handle them. Some "viewable EPS" files produced by *The Curator* show up in *Illustrator 88* as grey boxes. *PageMaker* displays the on-screen image of the same files.

2. I couldn't get the HPGL drivers used by Digital Research GEM products to produce 16-color files for conversion to Macintosh PICTs. It may be possible to preserve the color translation, but I didn't learn how in time for this deadline. The files I ended up with were in one or two colors with many tiny object groupings. On the Mac II I selected and grouped the images into more coherent objects for additional drawing and color modifications. (I was able to transfer files from *Harvard Graphics* and *AutoSketch* 100% accurately to the Mac with *The Graphics Transformer* and *PICture PICTure*. With *Harvard Graphics* I used the HP ColorPro (7440A) plotter driver.)

3. *GEM Draw* and *Artline* sometimes run out of memory and can't process all elements of complicated PICT files translated by *Ventura*. *Artline* handled all of the graphic elements, but sometimes couldn't process text. *Draw* handled some of the graphic elements. (*Ventura* itself had no problems displaying and printing the *MacDraw* files I tested.) If your *MacDraw* file is a multilayered PICT, with some bitmap information, you'll have to copy the bitmap part on the Mac to a *MacPaint* file and place it separately in *Ventura*. Only vector and text information is processed with the PICTs. (If you're using *SuperPaint*, save the entire image as *MacPaint*—*Ventura* doesn't handle information from *SuperPaint* PICTs.)

4. Remember to remove the MacBinary headers from TIFF and EPS files if you transfer them with a modem. TOPS doesn't seem to care about this.

Summary

The potential involved in making designer graphics portable between Macs and PCs is gradually becoming obvious. Several more products to facilitate this are being promised by large companies for release in the near future. In the meantime, *The Graphics Transformer*, *The Curator*, and *PICture PICTure* can significantly increase your Mac-PC file connectivity if you need it right now. ■

Copyright © 1989 by Lenny Bailes. All rights reserved. Lenny Bailes is a teacher in the Bay Area, and has been writing about personal computers since 1987. He does part-time consulting and product testing and can be reached on The WELL as "jroe" or at 415/285-6232.

RESOURCES

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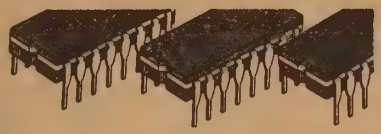

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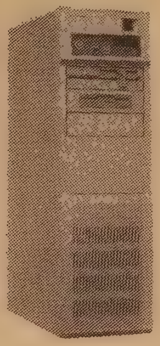

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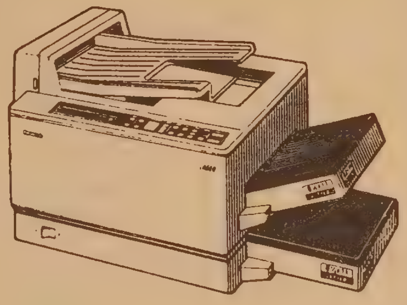

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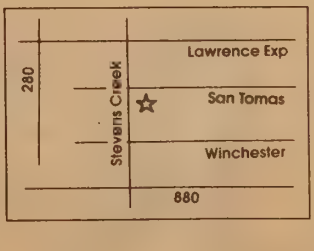

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BY ROBERT BEAUCHAMP

Microsoft Takes on WordPerfect

Word Leads Word Processor Grudge Match On Connectivity Points

The story goes that when WordPerfect first shipped version 5.0 of its word processor to an unsuspecting public, there were so many calls to its customer support line that callers couldn't get through. Not just to WordPerfect, that is; callers couldn't get through to *Orem, Utah*. An entire city cut off because of an upgrade.

Which emphasizes both the importance of new releases to loyal customers, and the problems and frustrations involved in releasing a new version of an old standby.

For some time now, the popularity of *WordPerfect* and *Word* for the PC has waxed, while that of such venerable products as *WordStar* and *Multimate* has waned. The two new powers are currently engaged in a kind of trench warfare on a scale not seen since the Germans eyed the French across Flanders' Fields.

It is truly a war of attrition, characterized by a "top this" progression of features. Microsoft's newest salvo, *Word* 5.0 for the PC, matches *WordPerfect* 5.0's innovative graphics features. However, *Word* goes *WordPerfect* one better by providing file compatibility with its sibling *Word* 4.0 for the Macintosh.

A conversation with Ruth Kurman, Product Manager for Microsoft *Word* on the Macintosh, provided insight into how Microsoft approaches the update question. It also provides a glimpse as to which word processor may win out in this duel. Kurman was previously the product manager for Microsoft *Word* for the PC, making her a good source for questions about the connectivity issue as well.

The biggest enhancement to *Word* 5.0 for the PC is its new graphics capabilities. These include a print preview function and the ability to import graphics files into your document.

Print preview lets you see what your document will look like when it's printed. This saves you from having to guess from your text screen what the appearance of headers, page numbering, charts, and graphics will be. You do need a graphics card and monitor to employ this feature, however. As with *WordPerfect,* you can't do any editing in this mode, you can only look at what you have. You need to go into text mode to make any changes.

Copyright © 1989 by Robert Beauchamp. All rights reserved. Rob is a freelance journalist and documentation writer who resides in Minnesota and misses, sometimes, the lovely and crowded Bay Area.

Also like *WordPerfect*, *Word* 5.0 lets you import graphics files into your documents. While both applications let you import a wide variety of formats, *Word* scores a connectivity point here by allowing you to use the clipboard in *Windows* 2.0/286/386 to import your pictures into *Word*. *Word*'s documentation is also much more thorough in discussing the use of graphics in a document than *WordPerfect's*. It provides helpful guidelines to page layout that might make you consider using *Word* alone for simple publications, rather than in conjunction with a page makeup program like *Ventura Publisher* or *PageMaker.*

Microsoft *Word* also lets you employ a mouse, unlike *WordPerfect*, making it easier to size graphics, highlight selections, and choose functions.

Like *WordPerfect*, *Word* offers a screen capture program allowing you to take "screen shots" and put them into your files. This feature is very useful to those documenting software.

If you're a Macintosh user, this all sounds like old news. Print preview? Putting graphics in text documents? Screen shots? A mouse? Are those very foundations of the Macintosh only now making it to the PC world?

However, there is also some news of interest to you in all this.

The New Word

Macintosh *Word's* newest incarnation, 4.0, also has new and impressive functions. And what's best, it is file compatible with *Word* 5.0 for the PC.

This is where Ruth Kurman comes in. One of the many aspects of her job is ensuring file compatibility among all the varied versions of *Word.*

One of the most difficult tasks, as she describes it, is to make sure *Word* files are "... not only upward compatible (you can open a *Word* 3.0 document in 4.0) but downward compatible as well. Not to mention compatible between Macintosh and PC versions."

"Granted," she explains, "not all the features of a *Word* 4.0 document will be operable when you open it in 3.0. For example, a chart you made using *Word* 4.0's new table feature will look as it did in *Word* 4.0, but it will just be a new paragraph.

The war of feature attrition will come to an end when one of the two contenders successfully puts a fully functional Word or WordPerfect in the Presentation Manager. With Excel, Adobe Illustrator, and a word processor one can finally envision never seeing the DOS prompt again.

"However," she continues, "if you don't touch that table and move the file back into 4.0, *Word* remembers it is a table and it's just as if you never took it out of 4.0."

This is what's known as a commitment to connectivity. An important one when you consider, as Ruth says, "... that not everyone in a company is going to upgrade on the same day, especially if you have sites where 5,000 copies of *Word* are installed, as we have."

This contrasts greatly to WordPerfect's record on connectivity. *WordPerfect* did make files of *WordPerfect* 4.2 for the PC and 5.0 for the PC compatible. However, *WordPerfect* for the Mac is a different story.

WordPerfect for the Mac has been much ma-

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Prices are subject to change without notice ligned by the press. To be fair, it should be noted that WordPerfect has issued an update, 1.0.2, that takes care of some problems. While it claims to have eliminated the annoying screen flicker, however, it has actually only reduced it. On my one-meg Mac Plus, there was still a slight flicker when you entered text. It may or may not be different on a machine with more memory.

WordPerfect also has included a radio style button that allows you to save your Mac files in *WordPerfect* 4.2 format. Notice you still can't save them in *WordPerfect* 5.0 format. Things don't get better coming from the other side either. In order to use a *WP* 5.0 file in *WP Mac,* you have to first save it in 4.2 format, then open it up on the Mac.

Toward the Future

Upgrades don't come cheap to the companies that issue them. Prices for an upgrade are determined more by tradition than actual costs. Today's recipients of upgrades expect a lot more as well. In fact, they pretty much expect all the manuals, templates, and other goodies that those who are paying full price get. Not to mention all the user support needed to get anxious users through the new features.

The strategy that companies take toward their upgrades, therefore, is going to become increasingly important.

Microsoft's plan, according to Kurman, is to use a core engine strategy. The "core engine" contains 80% of the application's functionality. The other 20% is context dependent. Therefore, when Microsoft issues a new version or ports a version over to another environment, most of the work is already done.

In the future this may be true not just of a single application, like a word processor, but of a whole range of applications, including spreadsheets, paint and planning, that come from the same core engine.

If this sounds familiar, it should. The concept is very closely linked to the idea of groupware. With groupware, everyone uses the same interface regardless of the type of computer they are using. A person on a PC can access information from a mainframe and not have to know anything about mainframes. A Macintosh user can sit down at a Sun workstation and get to work right away. No learning curve.

And if groupware requires a standard interface, such as the Mac interface emulated in Microsoft's *Windows* and the OS/2 Presentation Manager, *and* the best way to implement groupware is with the core engine strategy, you can begin to see this meandering dialectic come to its momentous collision.

The point of impact is the debut of *Word* or *WordPerfect* in an actual graphics interface in an actual graphics environment.

Macintosh Word's newest incarnation, 4.0, has new and impressive functions. And what's best, it is file compatible with Word 5.0 for the PC.

When are we going to see a major word processor, with full graphics capabilities and transparent file formats running in a *Windows* Presentation Manager window?

Putting a fully functional *Word* or *WordPerfect* in the Presentation Manager would be the equivalent of the advent of the blitzkrieg. The war of feature attrition will come to an end when one of the two contenders successfully makes this big leap.

It would also make the Presentation Manager a truly viable interface. With *Excel, Adobe Illustrator,* and a word processor one can finally envision never seeing the DOS prompt again.

Who'll win? Here's a clue: only one company owns a major word processor and *Windows* and OS/2. ■

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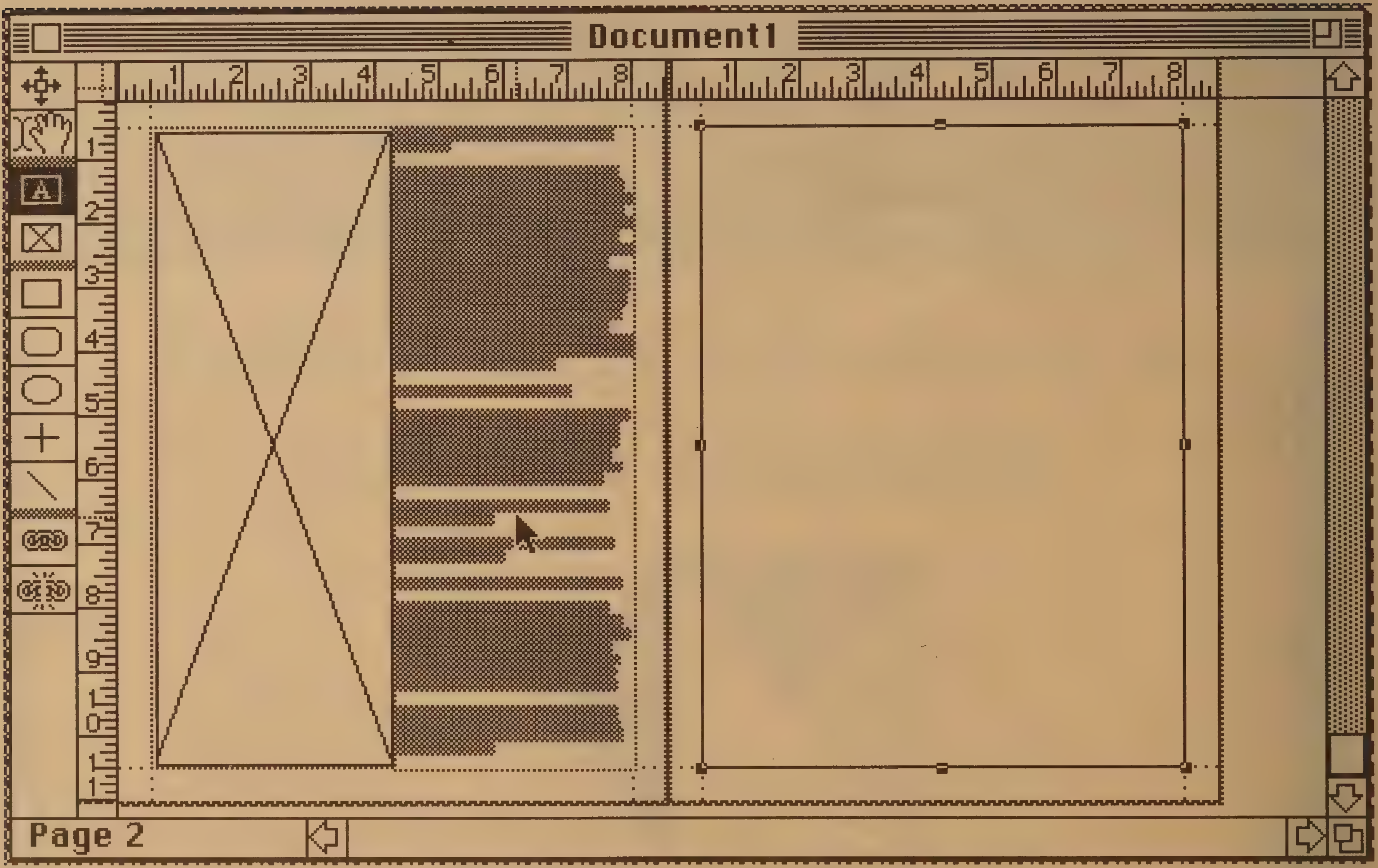

Like its big brother, QuarkXpress, QuarkStyle uses text and graphics boxes

At the end of last year, I reviewed a desktop publishing package called *Springboard Publisher*, an inexpensive application with some impressive features and notable drawbacks. This time I review a similar program that addresses many of *Springboard*'s failings yet maintains simplicity and ease of use at a budget price. All in all, it is a much better product.

QuarkStyle is a simplified desktop publishing program from Quark, makers of *QuarkXpress* 2.0. It is an impressive little application that can be mastered with less time and effort than a full-blown DTP application like *PageMaker* or *QuarkXpress.*

Although rather basic, *QuarkStyle* is actually quite powerful and elegant. There are some things you cannot do, like put white type on a black background or kern text, but for less than professional graphic design applications *QuarkStyle* is great.

While very similar to *Springboard* in the way it works and the market it addresses, *QuarkStyle* is a more well-thought-out application that gives the user greater power and flexibility. It also comes with a large selection of templates (three disks' worth) to make it easy to quickly put together brochures, newsletters, business cards, forms, memos, and the like.

Don't Box Me In

Like its bigger brother *QuarkXpress* (and *Springboard Publisher*), *QuarkStyle* employs boxes. This means that when you start with a blank page, you also start with a text box containing the words and columns you intend to put on that page. Anything else you plan to add to the page, such as text in sidebars or graphic images, must be put in other, smaller boxes that you create using special tools. A

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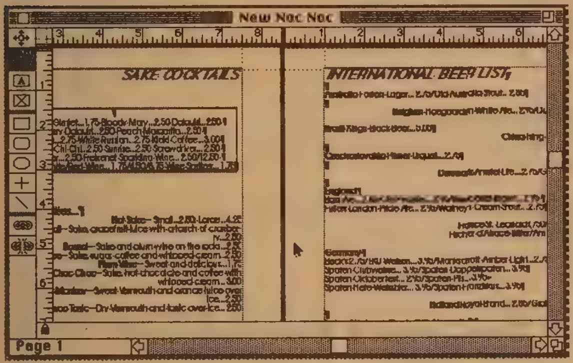
box containing other boxes is called a parent; the smaller boxes within it are called children.

I personally like this way of doing things, but I've heard that some users of desktop publishing software can't get accustomed to it. Perhaps going through the trouble of first having to draw a box before you can create or import text or graphics seems an unnecessary step. To me, having to create a box makes the design process more methodical and deliberate. I think that for the beginner it helps make things a little more clear cut and mistake proof. And if *QuarkStyle* is your *first* DTP application, not having the experience of working without text boxes should make using them easier.

Quark Gets It Right

What follows is a discussion, feature by feature, of what *QuarkStyle* does right that *Springboard* doesn't do so well. If you are in the market for a low-level page layout program—and these are the only two for the Mac that I am aware of—you should know what you get and don't get in each application.



Side-by-side layout lets you get the full effect of your pages

Precise Text Wraparound. *Springboard Publisher* has the ability to wrap text around a graphic rather than the box containing the graphic. This splendid feature creates a more professional looking page. *QuarkStyle* has the same capability, but with more control over how close the text comes to the graphic. This refinement makes the difference between a sloppy looking page and a finely tuned one. In *Springboard*, there tends to be too much space placed between graphic and text.

Imports EPSF. The quality of the graphics you can import into a page layout program also makes a big difference in how finished pages will look. The best graphics usually come from Encapsulated PostScript files (much clip art is available in this format). *QuarkStyle* allows you to import these files into your document along with *MacPaint* and PICT images. *Springboard Publisher* will only import *MacPaint* and PICT files.

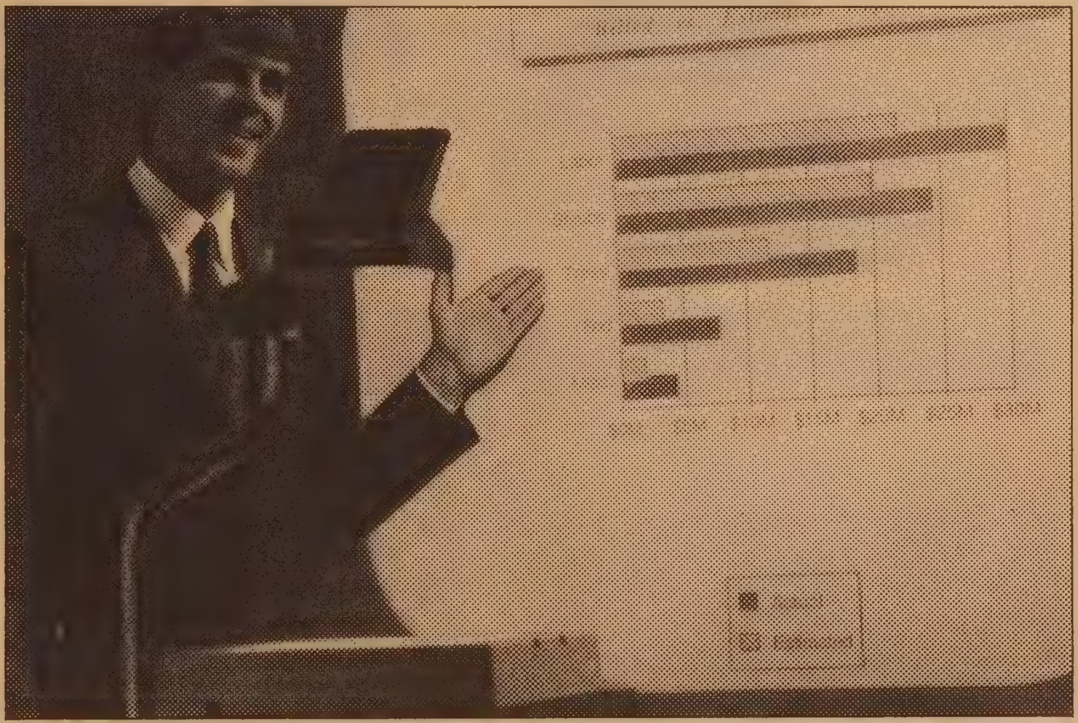
Imports more text formats. If you're editing a newsletter, your writers may all be using different word processing applications. *QuarkStyle* will import text from more different applications than will *Springboard*. It will read *MacWrite*, *Word*, *Works*, *WordPerfect*, and *WriteNow* files as well as ASCII. In *Springboard* you are limited to *Word*, *MacWrite*, and ASCII.

Supports tiling. When working on pages larger than those a laser printer can output (8.5" X 14"), tabloid-size, pages for example, have to be *tiled.* Tiling breaks the pages down into four 8.5" X 11" pages that can be pasted together. *QuarkStyle* supports this capability; *Springboard* does not. In *Springboard* you are limited to 8.5" X 14" as your largest page size.

Allows side-by-side pages in workable sizes. To get a good idea of how final pages will look, it is useful to view them side by side on the screen. In fact, creating pages in this mode is usually standard procedure. In *Springboard* you can only view pages side by side in thumbnail size. Not only is this too small to get the full effect of the layout, but you cannot conveniently and precisely work in it. You can have side-by-side pages in *QuarkStyle* in many different sizes, from 200% to thumbnail size. This capability has the added benefit of making it possible to scroll from one page to another, rather than having to clear the screen of one page and bring up another *a la Springboard Publisher.*

Has more sizes to view documents. Speaking of viewing documents, *QuarkStyle* allows more viewing sizes: thumbnail, 50%, 75%, 100%, and 200%. In *Springboard* you can only see the document in 200%, 100%, and thumbnail.

Is a lot faster. Page layout programs are never known for their speed, especially if you're on a lowly Plus or SE with a mere meg, but some are slower than others. *QuarkStyle* is as quick as they



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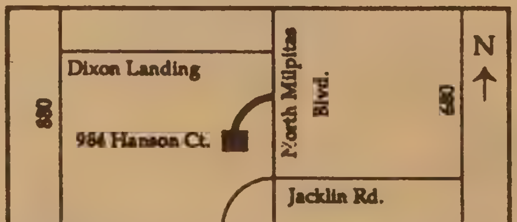

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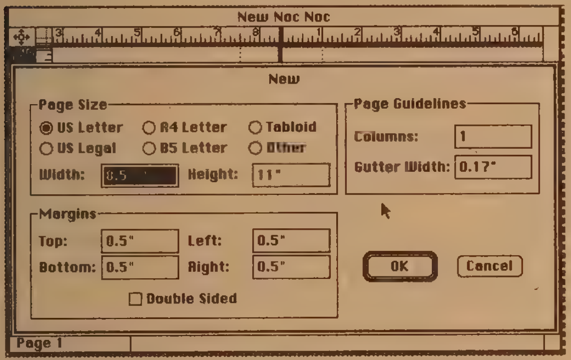
come. *Springboard*, on the other hand, is tediously slow. Granted, on a Mac II or SE/30, this problem would be lessened. But most people using a low-level DTP application for producing a newsletter or other simple document are not on a state-of-the-art machine. They're probably using the aforementioned lowly Plus or SE with a mere meg.

Has style sheets. Style sheets are amazingly useful. They allow you to set or change the text and paragraph formatting (including tabs) for bodies of text in one single stroke. *QuarkStyle* allows you to set up a number of different styles and attach them to a Style Sheets menu. When you need a particular style, you simply select it from the menu. You can even assign a keyboard command to it. *Springboard Publisher* does not offer this convenience.



Width: 8.5
Height: 11"
Columns: 1
Gutter Width: 0.17"
Top: 0.5"
Left: 0.5"
Bottom: 0.5"
Right: 0.5"

Page setup includes tabloid-size and double-sided pages

Text fills are easy. One thing I complained about in my *Springboard* review was the awkward way in which text fills were implemented. In fact, the program wasn't really designed to do text fills; they virtually have to be done in an elaborate workaround. In *QuarkStyle* text fills are utterly simple. When you create a text box you have the option of defining a fill from 10% to 100% from a dialog box.

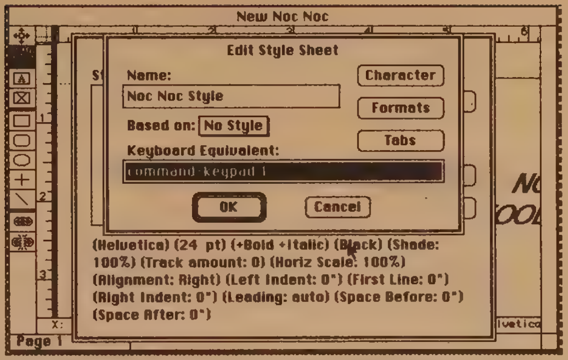
Other Differences

As word processors, which is what both *Springboard* and *QuarkXpress* also claim to be, neither will knock your socks off. I wouldn't suggest throwing away your favorite word processor for either of these two applications. Here again, though, *QuarkStyle* has the edge. It includes a spell checker and style sheets and works speedily without having to switch into a separate text entry mode.

On The Other Hand...

The one area in which *QuarkStyle* does not compete with *Springboard Publisher* is in paint capabilities. It does not come with tools to create graphics other than simple boxes and circles. If creating your own graphics is important, and you don't have a graphics application(!), you may want to take a closer look at *Springboard*.

But if you plan to use mainly clip art or PostScript graphics prepared in an application like *FreeHand* or *Illustrator 88*, you're more likely to want *QuarkStyle*.



Name: Noc Noc Style
Based on: No Style
Keyboard Equivalent: command-keypad 1

(Helvetica) (24 pt) (+Bold +Italic) (Black) (Shade: 100%) (Track amount: 0) (Horiz Scale: 100%) (Alignment: Right) (Left Indent: 0") (First Line: 0") (Right Indent: 0") (Leading: auto) (Space Before: 0") (Space After: 0")

QuarkStyle includes useful style sheets

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The folks at Quark went way overboard with templates, supplying three disks worth created by some notable graphic designers. For those who *really* want to simplify the process of desktop publishing, these templates make it easy to dispense entirely with the process of design. Just plug in the text you want in the places designated on the templates and, voila, you've got a business card, letterhead, mailing label, overhead, display ad, purchase order, etc. There are even templates for books, magazines, and newsletters.

With its templates and everything, *QuarkStyle* is a real price/performance bargain. For low-level desktop publishing it is an excellent program with no major drawbacks. I recommend it highly for anyone who needs less than fully professional DTP output. It is also much easier to learn than the heavyweights like *PageMaker*, *ReadySetGo!*, and *QuarkXpress*, making it a good application for the novice desktop publisher to cut his or her teeth on. And with its outstanding set of manuals, an uninitiated but motivated learner could be printing quality letterheads, business cards, and newsletters in short order. ($249) Quark Inc., 300 S. Jackson St., Suite 100, Denver, CO 80209. (303)934-2211. ■

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MAC @ WORK

BMUG

BY DAVID MORGENSTERN

System 7, nuPrometheus, And Other Surprises

Holy Mac, ByteMan — it's BMUG time again. We've got lots of little bits that can save you from big headaches and repair bills. Check out the new ways to contact the best source of righteous information — BMUG.

Low Level Programming And Marketing

There's no sadder sight in the computer world than a BMUG'er without a meeting to attend. Every semester, the Physical Sciences Lecture Hall is required for finals. The information addicts mill around aimlessly, without a good rumor. Human interface connoisseurs play guessing games about obscure defunct programs. The marketing teams breathe sighs of relief. It's an All-Star break and they have another week to prepare for combat.

No Mac Is An Outline

How many words will be spilled about the new Macintosh system software due out sometime in the next year? Until its release we will have to add a *System 7.0* caveat to everything, "of course under System 7.0 this will/will not...." After its release we'll have to keep to the same line, because it will be too problem-laden to safely use. Will that stop Mac users from diving into the ruckus? Think again.

There's a lot of interest in the Apple Outline fonts. This isn't a big surprise, since almost everyone (except the most orthodox telecommunicators) needs to print **something** sometime or other.

Like PostScript fonts, the Outline fonts are mathematical formulas used to create characters. No matter what the size of the letter, the relationship of the curves and line dimensions are maintained.

The Outline fonts will also improve the match between the display of your text on the computer screen and its printed form. Instead of installing preset sizes of bitmap fonts in the system, you will have a file containing the font information. As you use the Outline font, a bitmap for each character will be created and stored in memory. Then the characters are "printed" to the screen from the font cache. This process will only be done to the letters you use, which is good, since Apple has expanded each font set beyond the current 256 characters. Think Chinese and Japanese font requirements here.

Here's some more character building stuff:

- The font cache is another reason to start saving your pennies for more memory. You'll need Mb just to boot up. The watchword of *System 7.0* and the software that uses its features will be Memory-Hog! Oink-Oink.

Copyright © 1989 by David Morgenstern. David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on GEnie and himself at (415)549-BMUG

Upcoming Events

July 6: Jean-Louis Gassee, Apple Products President.

July 13: MacroMind's *Director* with Marc Canter, SuperMac *TrueColor* Monitor.

July 20: Dantz Development *Retrospect* (backup stuff), PBI *NetTrek.*

July 27: Mediagenic's *Active,* Sumo Systems Optical drives.

August 3: Coda *Finale* (Music), Nexsys *Travel Mac* Kit.

August 10: Loop Software *PictureBook.*

August 17: Acius *4D 2.0* with Guy Kawasaki.

August 24: Odesta *Double Helix.*

Call the BMUG HelpLine about attending our new monthly BMUG West meetings in San Francisco!

- The new Layout Manager software will draw the characters on the Mac's screen. It will have the ability to *kern* characters, based on information in the Outline. Kerning is a typographic quality spacing of letters. This also means that parts of letters can be extended to connect with other letters for cursive scripts, or Arabic. It also supports vertical text — now who would want that, Sculley-san?
- The Outline fonts will have *hints.* Hints are the little changes letters need when they're printed in very small sizes on low resolution devices (like laser printers!). Apple has provided a hinting language for font producers to really spruce up their typefaces.
- Can the Outline fonts be rotated or wrapped around curves? Not yet, but the capability to fool with the letters is there.
- Why didn't Apple use the already existing *Display PostScript* software, as Saint Steve did, for the NeXT computer? Some people feel that Apple is going to a lot of trouble to build features into QuickDraw that are already handled by Display PostScript.

There's no one answer to this conundrum. The world is going to get complicated and messy for Mac users. We might save some bucks in the process too. Oh, to live in interesting times — Yech!

Apple wants control over its own system software. It hates to be dependent on outside, or "foreign," technology. It's the notorious N.I.H. philosophy (Not Invented Here) that's kept other good things out of the drives of the deserving. Apple feels they've suffered enough shelling out $200-$400 for LaserWriter controlling software. How much extra would the Display PostScript cost? How much less will fancy QuickDraw printers be? What about people that share printers across a network?

QuickDraw code is old hat to the system programmers at Apple. It was easier for them to optimize and expand on existing software, than to figure out how to optimize Adobe's code for the Macintosh. Since it's free, it costs less than PS. PostScript would have been free too, if Apple had bought Adobe a few years ago when it had the chance.

Display PostScript may not be the sweetest onion in the field. It is reportedly the reason that *Mathematica* runs faster on the "slow" 16 MHz Mac II (with the 68020 processor), than on the 25 MHz NeXTcube (sporting the fancier 68030 chip).

What about all the PostScript fonts, printers, applications already sitting in our computers and on our desks? This is a major compatibility mess for Mac users. Adobe is coming out with their own font deli-counter display software called the Adobe Type Manager (ATM). There's also hope that conversion software will be written to convert the two types of fonts — good luck.

That's enough of beta-system software for now, kids. Stay tuned next month for the serial adventure, *ByteMan And The System of Doom!* Cue the organ...

INIT A Pretty Night?

INITs — you can't live with them or without them. They are little programs that you put in your System folder and are performed as your Macintosh boots up. Apple likes to call them *StartUp documents.* Some are fun and some are essential additions to your computing environment. Sometimes there's trouble with them.

A very popular INIT/CDEV is *SoundMaster* (on *BMUG Sounds 9, 10, 11, 14* disks). It allows you to assign a digitized sound to different key strokes, startup, restart, beeps, and more. Plenty of fun for all ages and computing style.

A BMUG member started having trouble after installing *SoundMaster* in his system. Upon shutdown, instead of the normal goodbye message, he got a bomb message indicating an address error. After a few days of despair and panic, the problem was discovered. It was that old devil, *INIT conflict.*

Often INITs want to "do" similar things, or use particular memory locations. If they don't get their way, they throw a tantrum and bring down everything in a loud crash.

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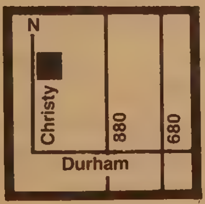

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It's easy to find the culprit. Take everything out and return the darlings one by one until — Crash. Since INITs are loaded alphabetically, adding a higher or lower letter to the front of the program's name will sometimes beat the bomb.

The *SoundMaster* problem was a conflict with the actions of a hard disk head-parking INIT. It was parking the drive head before *SoundMaster* had a chance to read and play its shutdown sound. The poor program had the rug pulled out from underneath it. Changing *Park* to *zPark* did the trick.

Hard nuNews

- Things are heating up in the top-secret offices of Apple Security Headquarters located in the back of an all-night grocery store. You gain entrance by handing the clerk an apple while saying the passwords, "Louis the 21st — Century."

Someone (or ones) called the *nuPrometheus League* have stolen the computer source code to Color QuickDraw and all the hardware Equate files for the Macintosh ROMs (this code lets Mac software identify the different flavors of Mac CPUs). They have also threatened to distribute the complete assembly language source code to Macintosh ROMs, the Hierarchical Filing System, and System software.

The motivation contained in a document enclosed with the stolen code was not based on greed, rather some hacker ethic. "Our objective at Apple is to distribute everything that prevents other manufacturers from creating legal copies of the Macintosh. As an organization, the nuPrometheus League has no ambition beyond seeing the genius of a few Apple employees benefit the entire world, not just dissipated by Apple Corporate through litigation and ill-will."

Apple is totally freaked out. Gassee is "shocked." They are reminding everyone that the theft and receipt of this code is a serious criminal offense (the big house).

Unfortunately the leak of the source code could hurt Apple and Macintosh users. We might end up with years of stagnant development, without hardware and software improvements. Apple's research and development budget would shrink along with their profit margins. Jobs will be lost to foreign companies that will be able to use the code to get around copyright code violations.

Did the nuPrometheus forget what happened to his original namesake? He was chained to a rock, where an eagle came daily to eat a hacker's liver — without onions even!

- Apple seems to be having some problems with some of its 40 and 80 Mb hard disk drives. The drives have more than the usual amount of start-up problems and will not be recognized by the *Finder*.

They will replace the drives for free under a "repair extension" if your drive is dead. This offer is for hard disks with serial numbers between 00335507-1023016. Finding out the number on a Mac II is easy because the top pops off, but opening your SE will void the warranty. If your dealer gives you grief, call Apple Customer Relations and complain.

- The new FDHD Super floppy drives for the Mac IIx, SE/30, and IIcx are shipped without the yellow fake disks coated with French and Japanese instructions. **They do not need the yellow disk and should not have one inserted in the drive.** The phony disk can cause real damage to the drive!

If you move your Mac with a plain old 800 K drive around (or to the fixit shop), place a real floppy in the drive. Perhaps a disk that can't be formatted. Toss the yellow toy disk, or use it as a finger puppet.

BMUG nuNews

- BMUG has a new forum on the *Connect On-Line Network*. This is an international computer network that covers the USA, Europe, Japan, Korea, and even parts of South America. You call a local phone number (or kinda local) and you're linked to BMUG and the world. You can send mail to other people on the network, get stock reports, and more.

Unlike other computer networks, Connect provides its own graphic based proprietary software, called *MacNET*. We're talking icons here, folks. It is very easy to learn and use.

What Is BMUG?

BMUG is a non-profit educational corporation, promoting the exchange of information. Like any growing organization, it is many different things to its 6,500+ international membership. BMUG, Inc. is a computer user group located in Berkeley, California. The group specializes in computers using a graphical interface. For a while that meant the Apple Macintosh but now includes other makes, models, and operating systems, including the NeXT best thing. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6:00 to 9:00 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus.

The BMUG HelpLine, (415) 849-HELP, and our fax number, (415) 849-9026, provide technical assistance and telephonic hand-holding during business hours (10:00 am - 5:30 pm). If your question can't be answered on the spot, we try to get you in touch with someone that can help. Of course, not every problem can have a happy ending — but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 400+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM*™, our entire library, and more on CD-ROM — according to Apple, it's the best selling CD-ROM!

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (415) 549-BMUG, or FAX (415) 849-9026.

Here's the scoop. For $2 you can get the *MacNET* software from us on disk. This includes the terminal program and the manual (on the disk). Also included is a 15 minute free trial offer. After that time is up, you will have to pay $27.50 — the regular price is $89.95. You will be asked for a credit card number and if you want to join then you'll be charged. This is a limited time offer, so get the disk and sign up now.

After this set-up charge, you pay by the hour. On-line charges are $4 after 7 pm and $8 during the day. There are no monthly fees or on-line storage charges. We hope to see you on the mainframe boulevard.

- If you want to order disks, information, or memberships from BMUG, please feel free to use our FAX line. Be sure to include your name, fax number, and other particulars. The number is (415) 849-9026.

More Small Stuff

- Why doesn't Apple put a handle on all of its products? Do they think we'll never have to move the LaserWriter to dust? Or bring the ImageWriter II into the repair shop across town? Mac IIs are supposed to be solid and impressive to the boss, but who ends up carting the thing around the office? The monitors are cumbersome and heavy. We need handles!

If you have to carry your new Mac IIcx around, get your old Mac Plus or 512K bag out of the closet. Some bags will allow the IIcx in sideways. Yes, you'll have to take your Mac Plus out first, wise guy.

- The Mysterious Case of the Blue Dashes. If your Mac II starts getting blue dashes on the screen, followed by a hung system, you will not be a happy camper. Hitting the restart button and turning the Mac on/off doesn't do the trick. The Mac is sent to the doctor for diagnostics and everything checks out fine.

The problem may be in the video memory chips working their way free of the board. Try pressing them back into place. Be careful about static electricity when doing this, since the chips are CMOS and can be damaged by small amounts of static electricity. If this makes you nervous, have someone else do it for you. Perhaps your mother, cat, or friendly neighborhood electrical engineer.

Shareware Spotlight

The answers to problems at BMUG come from the hard and soft headed programmers, users, and hackers that volunteer their time and expertise. After a hard day at the chip mines, they come and save the day (or evening).

BMUGers John Sawyer and Chuck Meyer of Berkeley's CJS Systems (one of the Bay Area's best and most experienced repair shops) had encountered a serious problem with 800 K floppy drives.

Every once in a while, the read/write head will catch on the shutter door of the diskette and tear off as the disk is ejecting, permanently damaging the drive. This would usually happen if the heads were towards the outer edge of the diskette—not an unusual position.

If you've ever had your drive suddenly refuse to recognize familiar disks, or had a disk stuck fast in the drive, this may have happened to you. This condition is usually catastrophic and requires replacing the drive.

SafeEject and a lot of other goodies are on BMUG *Utilities 14* disk. ■

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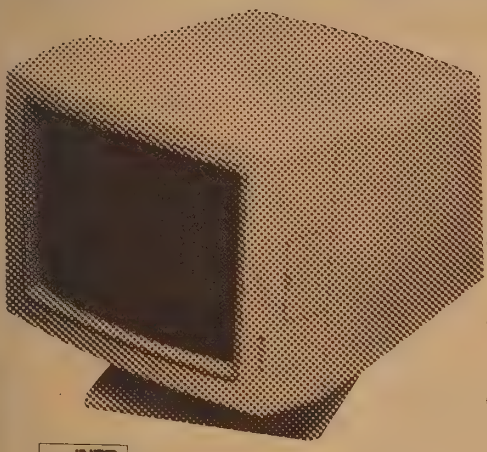

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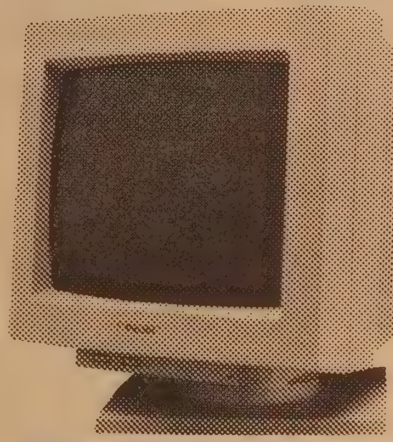

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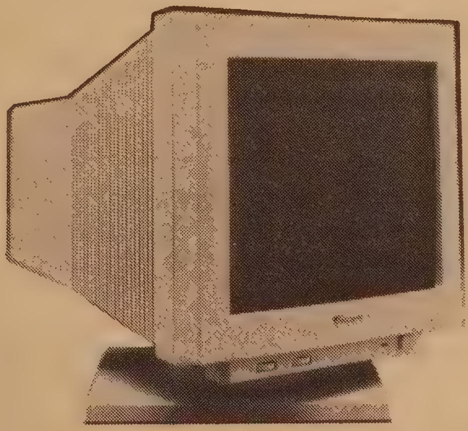

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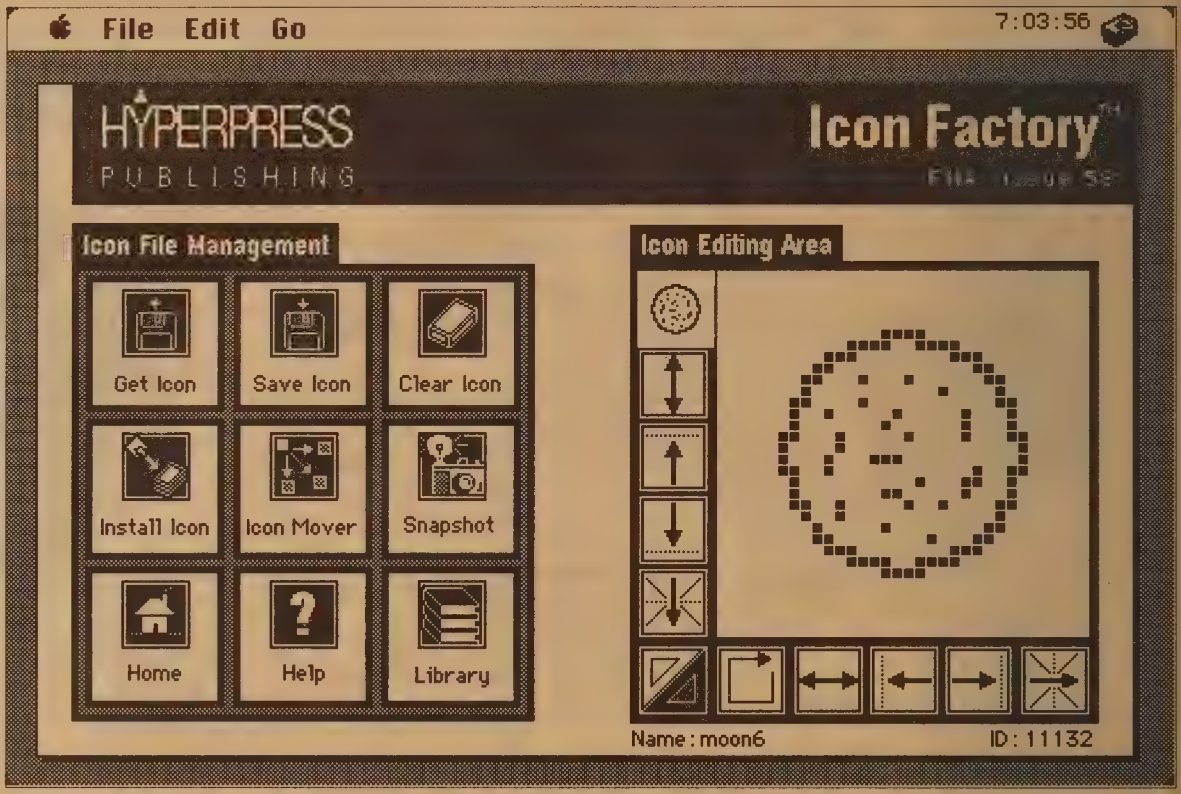


Name: moon6 ID: 11132

HyperPress' Icon Factory lets you build and edit icons for yourself.

HyperCard is a presentation tool; it's currently making its way into schools and offices all over the globe because of its facilities that make presentations easy.

My favorite facility is the button icons, because with button icons you can make easy animations. When you create a button, or check the button information, you are offered a choice of number of options. You can choose the icons by clicking the "Icon" choice in the button information dialogue box. You can set the button's location by dragging it into position.

If you have not used HyperTalk, you may not have run into the second way to set button "properties"—with a script. If you have never tried HyperTalk, here is a chance to begin.

You can set the location of a button with the HyperTalk command

```
set the loc of card button "Arrow" to 33, 105
```

and you can set the icon by giving this command, which calls the icon by number:

```
set the icon of card button "Arrow" to 17555
```

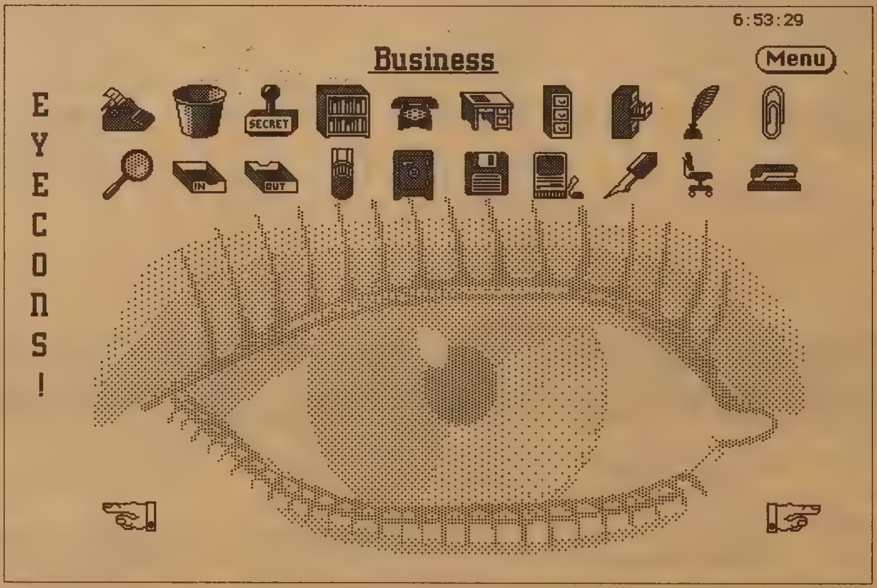
I used the HyperTalk commands to make a simple room directory at a small hotel. When the user pushes the button "Find My Room," a dialogue box opens and asks for the user's name. The script then looks up that name in a hidden field called "Guests," and positions an arrow-shaped pointer to show the user the right room. The Message Box says what room the guest is in. If there is no guest of that name, the Message box says that, too.

The script is attached to one button—card button "Find My Room"—but it sends commands to another—card button "Arrow." The "Arrow" button is used only for its ability to have various locations and icons. The "Arrow" button is moved to point to the right room. An icon that points up is chosen if the room is in the top wing. A right-pointing arrow is selected if room 8 is the choice; and if the room is on the lower wing a down-pointing arrow is selected.

I could have calculated the location for the arrow in each case. *HyperCard* does its arithmetic slowly, so it is better to calculate these things in advance, and store them somewhere. I made a hidden field called "Coordinates," in which I stored the horizontal coordinate for each room's arrow on the corresponding line, and after it the right icon number to use. Room 6's coordinate and icon were stored on line 6, and so forth. I also used a second hidden field, "Guests," to keep a guest list. Again, the occupant of room 6 was on line 6. I put the information in the second and third items on the line. An "item" in HyperTalk is something separated from something else by a comma. The first item on every line is the line number, which I put there for my convenience in writing the scripts. So line 6 of card field "Guests" is "6, Fawn Hall." These fields give much faster lookup than any calculation, and reduce the user's waiting time.

Here is the whole script. Anything on a line following "—" is a comment.

```
on mouseUp
 Hide Message Box
 — so it won't have the last message in it
 Ask "To find your room, please type your name."
 put it into TheName
```



Eyecons! from Heizer Stackware has icons for business, games, pointers, and animations.

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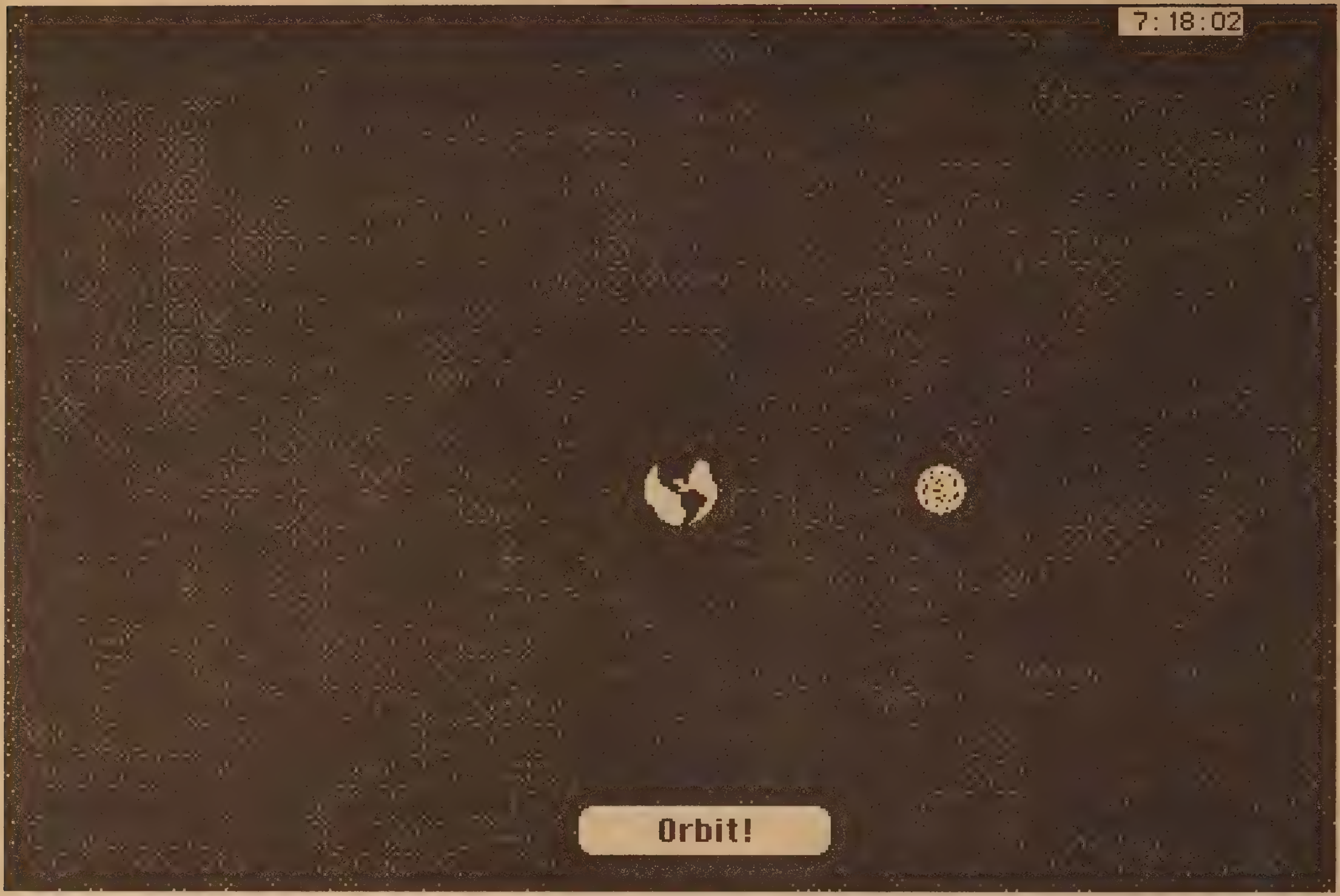


In this animation the earth turns and the moon circles the earth. The Earth icon is from Eyecons!, and the moon was made in Icon Factory.

```
repeat with room = 1 to 16
get line room of card field “Guests”
if item 2 of it is TheName
then exit repeat — because we have found the room number.
end repeat
— if not in room 1 through 15
if room = 16 then
set the icon of card button “Arrow” to 0 —no icon
put “Sorry - “& TheName &” is not registered now.”
exit mouseUp — nothing else to show
end if
— but if room was between 1 and 15
— look up the arrow’s horizontal coordinate
get line room of card field “Coordinates”
put item 2 of it into x
put item 3 of it into iconNumber
put x &”,175" into where
— place the “Arrow” button and choose its icon
set the location of card button “Arrow” to where
set the icon of card button “Arrow” to iconNumber
—and put information in the Message Box.
Put TheName & “ is staying in Room “& room
end mouseUp
```

You can download this stack from The WELL (415-332-6106, among other numbers). After signing on, and signing up in you are not a member, type “g hype” to get to the HyperCard Conference. Then type “lib” and follow instructions to find “July HyperCard.sit”. The column and the stack will be archived in StuffIt format.

If you want to look at the hidden fields, call up the Message Box by typing Command-M. Then type

```
show card field “Guests”
```

or

```
show card field “Coordinates”
```

into the Message Box and hit return. You can hide the field again by typing

```
hide card field “Guests”
```

or

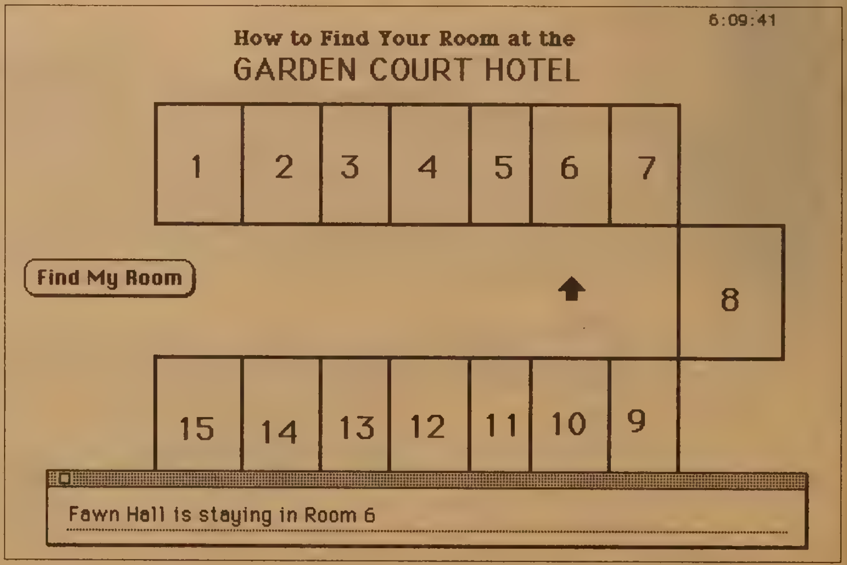
```
hide card field “Coordinates”
```

Useful Tools

Once you discover the pleasure of moving buttons around and giving them different icons, you will want to have more icon choices than you have with the basic *HyperCard*. There are two solutions. You can design your own, or you can use someone else’s designs.

If you prefer to use someone else’s, you should consider the stack **Eyecons!** from Heizer Software. For $12 you get 301 very well-designed icons, ready for use. This is the solution for lazy people like me. (Heizer Software Order Line: 800/888-7667. If you don’t have their catalogue, ask them to send it to you.)

If you have more energy or a specific need, get an icon editor and make your own icons. I used the Earth icons from *Eyecons!* when I needed to build an animation of the Earth-Moon system. (This card is in the same stack on the WELL.) I used HyperPress’s *Icon Factory* to design a moon. The program comes with a large library of icons and an editor that lets you build and install icons of your own design. You can even capture them from existing artwork. It costs $49.95 from HyperPress (415/345-4620) or from your favorite Mac software store. ■



Fawn Hall is staying in Room 6

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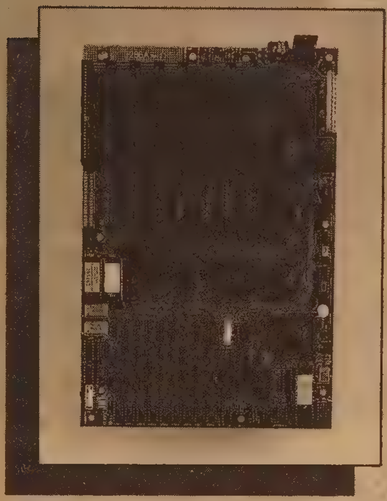

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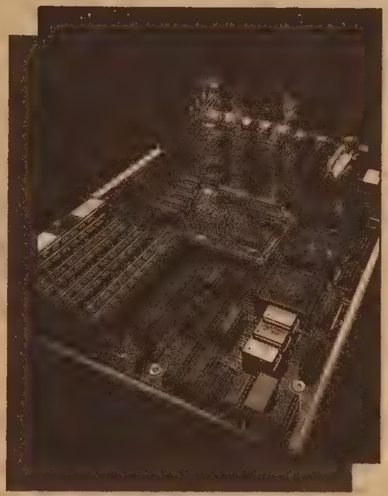

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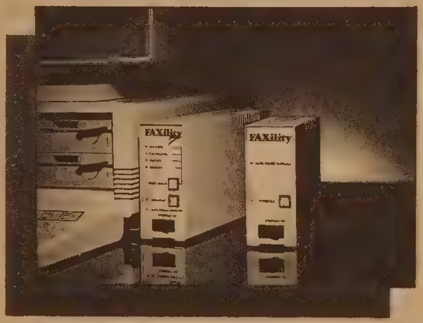

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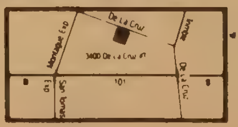

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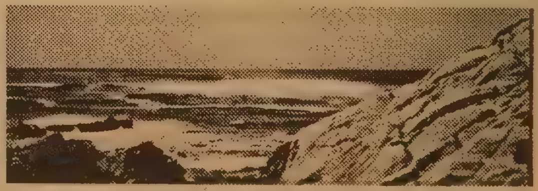

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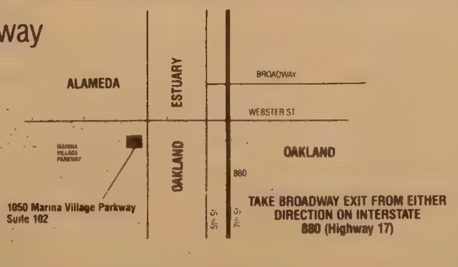
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BY BENNETT FALK

The Black Box

Perhaps it was inevitable that, in a world of putty-colored rectangles, someone would finally build a black box, something that managed to be both useful and mysterious. NeXT has packaged its first computer in just this way: it is a black cube tethered by a single cord to a monitor and keyboard. On the outside there are connectors for just about every attachment imaginable. On the inside there are exotic components, including an optical disk drive and digital signal processor. The operating system is Carnegie Mellon University's Mach, functionally compatible with Berkeley UNIX 4.3, but with a much different approach to processing from that of UNIX.

The NeXT computer illustrates better than any other product available what has become of the workstation notion. Computer workstations and their users are clearly in transition, but no one is exactly sure what they are in transition to. The audience for workstations is growing, but as it has grown, ideas about what to use workstations for have become more diffuse. This in turn poses certain problems for manufacturers who must build hardware for lots of different uses.

Early on, workstations were used almost exclusively for scientific and technical applications. Because they gave the programmer a single interface from which every aspect of program development could be manipulated, the first workstations were particularly good tools for software engineering. In the scientific community workstations were used to distribute the burden of computationally intensive jobs.

Eventually, improved graphics capabilities made workstations interesting for applications in architecture and design. Faster processors, lower prices, network connectivity, and database software lured first the business community and finally a wider general audience into the workstation camp.

The NeXT computer was built from the ground up as a workstation for this more general audience. Marketed as the "scholar's workstation," it is supposed to be as useful for students of music or comparative literature as for computer science devotees. The promise is that the NeXT workstation has something for everyone.

Hardware

The hardware and software specs of the NeXT package certainly bear this out. Inside the black box is a single board computer with a Motorola 68030 CPU running at 25 MHz. The system also contains a 68882 floating point processor and a digital signal processing chip. The standard configuration includes 8 Mb of memory expandable in increments of 4 Mb to 16 Mb on the motherboard. For mass storage, the system has a "magneto-optical" disk drive whose removable cartridges can store up to 256 Mb. A SCSI device controller and Ethernet hardware are also standard. SCSI hard disks of various sizes can be added.

Copyright © 1989 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed here are his own.*

The mother board supports NuBus expansion slots and has numerous ports including a monitor port, a serial printer port, an Ethernet connector, a SCSI connector, two general purpose serial ports, and port for the digital signal processor. In addition, the monitor has connectors for headphones, left and right stereo channels, and microphone input.

The NeXT display is a 17-inch black and white monitor with an 1120 by 832 pixel display. Connected to the monitor are a two-button mouse and a modestly sized keyboard.

Software

The system software is no less sophisticated than the hardware on which it runs. On the surface, the Mach operating system looks very much like Berkeley UNIX, and indeed, moving applications from Berkeley UNIX to Mach should be relatively easy. Mach internals, however, are another matter altogether. Mach allows single processes or "tasks" to be multi-threaded. Ordinary UNIX processes are single-threaded: they execute one instruction at a time in a single sequence. Multi-threading allows various components of a process to execute simultaneously. The success of multi-threading depends on the operating system's facilities for communication between processes and between the threads of a single process. In Mach inter-process communication is handled by passing messages over a port or queue that is a component of each thread.

The NeXT system includes a Window Server that manages the display on the workstation's console. The Window Server operates along the same lines as X Windows or NeWS: a server process directs traffic, collecting user input and passing it to the relevant application program. Programs in turn send back to the server instructions (using Adobe Systems' Display PostScript) for display output.

For developers, the NeXT system includes a C compiler and "Objective-C", a C pre-processor that enables C programmers to take advantage of object-oriented programming techniques. Also provided are a number of "kits" that give the developer an interface to various features of the NeXT system. The Application Kit, for example, is used to construct programs that use NeXT's Window Server. There are also kits providing access to the machine's audio facilities.

And of course there are applications. In addition to a word processor, enhanced electronic mail, a program for graphic design, and modeling, there is a very nice text retrieval system that can be used to browse reference works, the works of Shakespeare, or the system documentation.

The NeXT system is certainly feature-laden. There is almost nothing the machine has not been equipped to do. The only open question is how well it performs, and even though the Mach operating system differs from UNIX in many ways, Mach's compatibility with 4.3 BSD is more than adequate to run benchmark programs commonly used on UNIX systems. The UNIX benchmarks should provide a rough idea of how the NeXT hardware compares with other computers that run UNIX.

Benchmarking The NeXT

The NeXT computer used in the tests was configured with a 25 MHz 68030 CPU with a 68882 floating point processor and 12 Mb RAM, and it ran a preliminary version of the Mach operating system (Version 0.9). The tests used here are a modified version of the benchmarks first published by David Hinnant in his article "Benchmarking UNIX Systems", *BYTE* (August, 1984). The tests measure performance for CPU intensive activity, disk access, multi-user activity, and repeated program compilation.

The NeXT's results appear in Tables 1–4 along with the figures obtained from running the same tests on three other machines: a Compaq 386 (16 MHz 80386, 2 Mb Memory, and 8 MHz 80287 coprocessor) running SCO's XENIX, a Sun Microsystems 3/50 (16 MHz 68020, 4 Mb) running SunOS 3.2, and an Apple Macintosh II (16 MHz. 68020, 8 Mb) running A/UX 1.0. The Compaq and Sun machines were benchmarked in 1987, and represent an earlier, less powerful generation of workstation. (Indeed, in 1987 the Sun 3/50 was well on its way to being "old" technology.) The Macintosh II was tested in 1988. The overall slowness of the Mac II is attributable to the slow SCSI disk used for A/UX. Comparing the NeXT's results with the 1987 benchmarks gives a reasonable indication of how workstation hardware has advanced in the last two years. Apple, Sun, and Compaq have current models whose configurations more closely match that of the NeXT computer.

On each computer, the test suite was run ten times. The figures in Tables 1–4 are averages for each test over ten repetitions. The figures labeled "Real" represent clock time or elapsed time for each test; "User" and "System" time are measurements of the time spent by the CPU running user instructions and privileged system calls, respectively. The total CPU time is the sum of "User" time and "System" time.

The NeXT computer delivers extraordinary CPU performance. Running at 25 MHz with a supporting math processor, it was expected to post better times than the others tested. However, NeXT completed the "sieve" and "loop" benchmarks in less than one-third the time required by the Compaq, and this is an advantage that could not have been predicted

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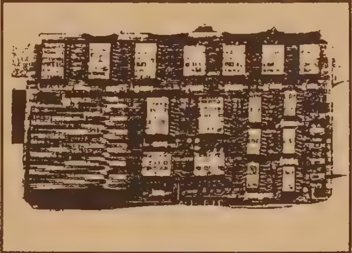

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from a simple comparison of the hardware specifications. NeXT's performance on the system call test is about what was expected. The function call overhead on the NeXT is very low, and the "assignment" test was completed so quickly that the UNIX "time" command was unable to measure it.

NeXT's performance on disk intensive tests was also very good. (The disk tests used a SCSI hard disk and not the slower optical drive.) It posted better times than the older Compaq on both disk read and disk write. It was slower than the Compaq on the "pipe" test.

The results of the multi-user tests show the NeXT running extremely well with a light load and degrading slightly with each additional user. NeXT's multi-user performance is clearly better than either of the 68020 based machines tested. The excellent results obtained from the Compaq/XENIX combination (on both the multi-user test and the compiling test described below) illustrate how much operating system efficiency contributes to performance.

The NeXT performed extremely well compiling the benchmark programs. This test measures how long it takes to compile the other test programs, none of which is very large. Typically, NeXT completed the compilations in less than half the time required by the older Sun.

The benchmarks show the NeXT machine to be a very powerful computer. That power coupled with its elaborate list of features may well mean that the first "jack-of-all-trades" workstation will be one of the best. ■

Table 1: CPU Intensive Tests:

	Compaq 386	Sun 3/50	Apple Mac II	NeXT
Executing sieve				
100 iterations 1899 primes				
Real	11.3	14.16	11.61	3.4
User	11.1	13.19	11.3	3.24
System	0.05	0.05	0.01	0.04
System Call				
Real	2.45	3.73	3.26	1.95
User	0.26	0.69	0.06	0.14
System	2.08	2.8	3.07	1.75
Loop Test				
Real	2.06	2.15	1.96	0.6
User	1.9	1.94	1.7	0.5
System	0.03	0.01	0	0
Function Call Overhead				
Function Call				
Real	0.35	0.4	0.42	0.11
User	0.2	0.28	0.3	0.1
System	0	0.01	0	0
Assignment				
Real	0.19	0.13	0.13	0
User	0	0	0	0
System	0	0.02	0	0
Overhead	0.16	0.27	0.29	0.11

Table 2: Disk Intensive Tests

	Compaq 386	Sun 3/50	Apple Mac II	NeXT
Disk Write				
Real	0.44	1.66	1.57	0.36
User	0	0	0	0
System	0.28	0.54	0.3	0.2
Disk Read				
Real	0.44	1.62	3.04	0.41
User	0	0	0	0
System	0.26	0.47	0.45	0.35
Pipe Test				
Real	1.41	3.55	2.18	1.49
User	0	0	0	0
System	0.6	1.65	0.96	0.69

Table 3: Multi-User Tests

	Compaq 386	Sun 3/50	Apple Mac II	NeXT
Shell (one user)				
Real	2.2	4.15	5.32	1.79
User	0.07	0.11	0.04	0.01
System	0.68	1.01	0.41	0.7
Shell (two users)				
Real	2.12	5.26	4.62	3.3
User	0.13	0.25	0.16	0.12
System	1.23	1.92	1.06	1.4
Shell (three users)				
Real	3.34	8.54	6.46	5.12
User	0.17	0.34	0.25	0.14
System	1.83	2.83	1.67	2.14
Shell (four users)				
Real	4.34	9.51	8.18	6.88
User	0.3	0.45	0.31	0.23
System	2.4	4	2.22	2.84
Shell (five users)				
Real	5.04	12.68	10.03	8.61
User	0.37	0.65	0.44	0.32
System	3.01	5.24	2.85	3.48
Shell (six users)				
Real	5.93	14.97	12.21	10.34
User	0.45	0.75	0.47	0.4
System	3.57	6.69	3.4	4.27

Table 4: Compiling the Test Programs

	Compaq 386	Sun 3/50	Apple Mac II	NeXT
Compiling dwrite.c				
Real	7.62	8.29	23.25	3.33
User	1.24	1.41	1.39	1.32
System	2.25	1.55	1.42	1.01
Compiling dread.c				
Real	3.3	7.35	24.01	3.3
User	1.29	1.51	1.55	1.37
System	1.17	1.49	1.45	1.01
Compiling fcalle.c				
Real	2.67	6.93	20.35	2.56
User	0.7	1.03	0.68	0.87
System	1.14	1.39	1.07	0.91
Compiling fcalla.c				
Real	2.54	5.93	19.77	2.53
User	0.68	0.92	0.5	0.79
System	1.08	1.34	0.95	0.93
Compiling loop.c				
Real	2.73	6.65	20.47	2.45
User	0.75	0.95	0.72	0.77
System	1.1	1.4	1.2	0.94
Compiling pipes.c				
Real	3.01	6.62	22.07	2.72
User	1.11	1.33	1.18	1.02
System	1.11	1.44	1.35	0.96
Compiling scall.c				
Real	2.63	5.73	19.88	2.44
User	0.67	0.92	0.48	0.8
System	1.07	1.34	1	0.97
Compiling sieve.c				
Real	3.1	6.74	22.04	2.66
User	1.18	1.43	1.59	0.99
System	1.09	1.45	1.35	0.94

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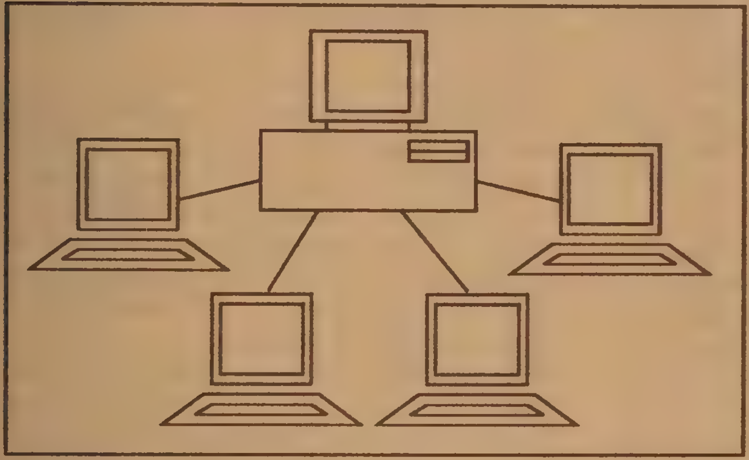

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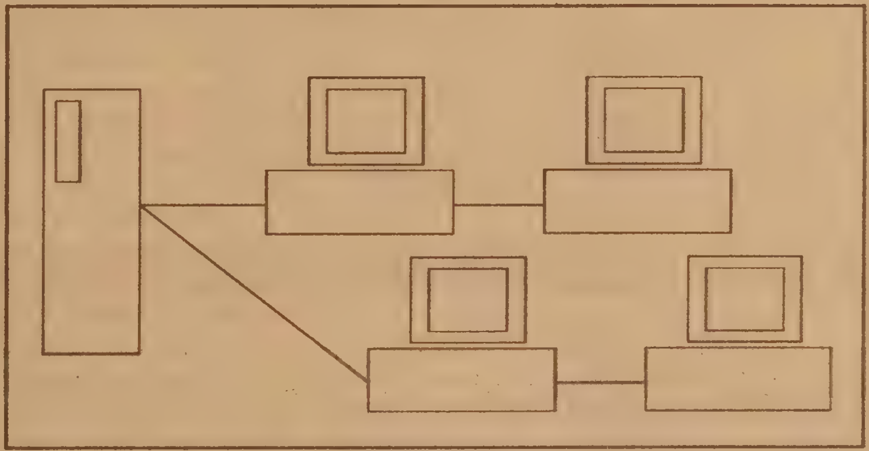

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LANs

BY WAYNE YACCO

LAN Basics Continued

Last month we began a tutorial with a discussion of the physical and logical aspects of network protocols. This month we'll take a more specific look at some of the protocols that follow the ISO-OSI model (figure 1) and also at some that don't. In addition, we'll discuss the evolution of LANs from their recent beginnings to the present and examine *NetWare 386* and its protocol engine.

Protocols

There are many protocols besides those used in AppleTalk and Novell's *NetWare*. Transmission Control Protocol/Internet Protocol (TCP/IP) and Xerox Network System (XNS) protocols both have features roughly analogous to the upper five levels of ISO-OSI but they employ alternative designs.

Both have protocols that cross and overlap the boundaries in the OSI model. TCP/IP is primarily concerned with the Transport and Network layers. XNS concentrates on Transport, Network, and Session layers. (The Transport protocol used by Novell, IPX, is a subset of XNS.)

Their parts do not have a one-to-one correspondence with ISO-OSI. For example, TCP/IP provides the equivalent of the model's Session, Presentation, and Application layers with its FTP and TELNET (File Transfer Protocol-TELNET) protocols.

Although not all protocols conform to it, ISO-OSI remains a useful framework for discussing protocols because real protocols do provide the same services. Therefore, layers in the model work to describe other standards.

The Institute of Electrical and Electronic Engineers (IEEE) has a standard, 802, which corresponds, in part, to the Physical and Data Link protocols. IEEE 802.3, for example, is the accepted standard for the bus topology and Carrier Sense Multiple Access with Collision Detection (CSMA/CD) access method used by Ethernet. The 802.5 specification is the Token Ring (read: IBM) standard .

The IBM standard, which corresponds to the Network layer, is its System Network Architecture (SNA). Within SNA are parts that, although organized differently, perform the services of the OSI model. Advanced Program-to-Program Communications (APPC) is roughly analogous to the OSI Session layer and is implemented in session products like APPC/PC and LU 6.2.

NetBIOS (Network Basic Input/Output System) is primarily a session protocol with some features of the Transport and Presentation layers that were developed for IBM's PC LAN. Many application programs use the NetBIOS session protocol to communicate across the network with an operating system, other applications, or other parts of the same application (say a database server). So other networks often provide the ability to service NetBIOS calls (e.g., through emulation) for these applications, and are described as NetBIOS compatible.

There are other basic elements in addition to those we've used in describing the ISO/OSI model. Two of the most common are Bridges and Gateways. Bridges connect LANs. They allow the nodes of one LAN to access the nodes and resources of another. Gateways connect dissimilar networks. A gateway may be necessary to connect a LAN to a TCP/IP network. They are used to provide access to the networks of major information services.

NetWare 386

LANs began as a means for users to share resources, such as expensive disk drives and printers. The next generation provided file sharing and multiuser support. The current generation adds the ability to perform distributed processing. Distributed processing allows nodes to share work loads.

The next generation, which is beginning to appear on PCs, also provides database servers that interpret and execute query instructions at the server and send only the desired information to the node making the request. Until now, LANs have used file servers that send all of the records in a database and require the node to apply selection criteria locally. The database server can thus reduce network traffic drastically.

In both the file-server and database-server examples, a workstation requests services from a server that manages a resource such as a file system or database. Each is an implementation of the client-server model.

The PC-based platform that will support much of the network traffic in the near future will be *NetWare 386*. Novell plans to release versions of this software beginning in the third quarter of 1989.

NetWare 386 requires an 80386-based PC and is designed to take advantage of the chip's design. For large networks, it will run from two to three times faster than previous versions of the software. But speed is only one of the benefits it will bring.

Installing a network can be an onerous task. Many resource-allocation parameters must be specified. And until the network is running, it is difficult to know how much memory, for example, is required by each server process. *Netware 386* handles memory allocation dynamically, based on need and available memory, moving resources from server processes to cache buffers or open files as required for optimal performance. Novell claims that this LAN will have a 15-minute installation time!

Netware 386 even allows new features to be added to the network without interrupting ongoing processes. LAN and disk drivers, protocol stacks, and server utilities can be dynamically loaded or unloaded without disturbing the network or any running sessions.

With the initial delivery of Version 3.1 scheduled for the first quarter of 1990, Novell will begin implementing its Open Protocol Technology (OPT). OPT is another major advancement of *NetWare 386* and part of a protocol engine that will manage different protocols. It will allow *Netware 386* to provide communication among a large number of common protocols and dynamically manage most widely used protocols, loading stacks as required.

Many hardware and software platforms will be able to attach to *NetWare 386* LANs. Nodes will be able to operate under a variety of client-server protocols including DOS and NetWare Core Protocols (NCP), OS/2 and the Server Message Block (SMB), the Macintosh operating system and AppleTalk Filing Protocol (AFP), and UNIX with the Network File System (NFS). Interprocess Communications (IPC), or Session, protocols including SPX, NetBIOS, Named Pipes, Transport Level Interface (TLI), Berkeley Sockets, and APPC are supported. So are multiple Transport protocols such as IPX, NetBEUI, AppleTalk, TCP/IP, SNA, and OSI. Supported LAN interface boards will include Ethernet, Token-Ring, LocalTalk, ARCNET, SDLC, T1, and Asynchronous.

The new version of NetWare incorporates the set of Streams Unix calls, an implementation based on AT&T UNIX System V release 3. Streams is a development-support library for writing protocol stacks; it allows *NetWare 386* and its third-party developers to easily manage different protocol stacks.

NetWare 386 will also have in its protocol engine the Open Data-Link Interface, which will manage communication with the different interface cards and associated drivers of various physical layers.

Netware 386 will raise the maximum number of simultaneous users from 100 to 250 per network. It will support up to 32 terabytes (that's 32 followed by enough zeros to lead an attack on Pearl Harbor) of disk storage, up to 100,000 concurrently open files, 25,000 concurrent transactions, four gigabytes of RAM, and files as large as four gigabytes. In addition, the software can sense the presence of an i486 chip and use i486-specific instructions.

If Novell delivers what it has promised, this should be an impressive piece of work.■

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Figure 1
ISO-OSI Model

Application
Presentation
Session
Transport
Network
Data Link
Physical

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7. DOS 3.3 is standard. **8. OS/2**
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11. The STEP computer uses a large cache of very high speed static RAM which allows the processor to operate with zero effective wait states. The SRAM cache is implemented via **Everex's** Advanced Memory Management Architecture which provides higher throughput than is available with caching schemes available on other PC-compatibles.

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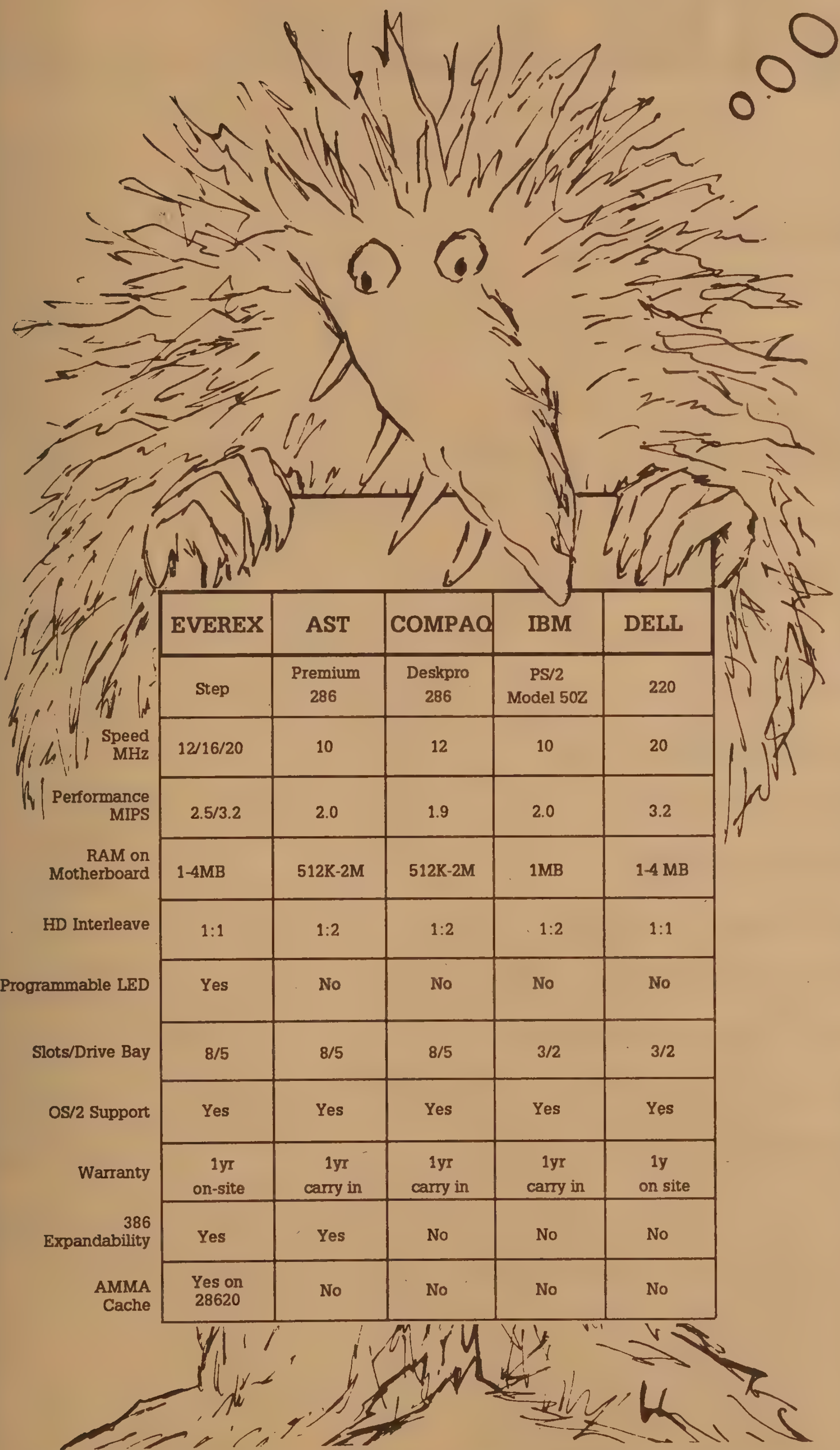

	EVEREX	AST	COMPAQ	IBM	DELL
	Step	Premium 286	Deskpro 286	PS/2 Model 50Z	220
Speed MHz	12/16/20	10	12	10	20
Performance MIPS	2.5/3.2	2.0	1.9	2.0	3.2
RAM on Motherboard	1-4MB	512K-2M	512K-2M	1MB	1-4 MB
HD Interleave	1:1	1:2	1:2	1:2	1:1
Programmable LED	Yes	No	No	No	No
Slots/Drive Bay	8/5	8/5	8/5	3/2	3/2
OS/2 Support	Yes	Yes	Yes	Yes	Yes
Warranty	1yr on-site	1yr carry in	1yr carry in	1yr carry in	1y on site
386 Expandability	Yes	Yes	No	No	No
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BY MATTHEW LEEDS

Fine-Tuning The Amiga

Or: Son Of Flicker

It's no secret that the number-one use for all computers is word processing. The bad old days of typewriters, lift-off tape, whiteout, and retyping manuscripts are long gone. As a writer, I spend eight to ten hours a day using computers, either looking at new programs or writing. Creating the perfect writing environment is an ongoing project for me.

The native Topaz 8 font used by the Amiga leaves much to be desired. Aside from the fact that it is hard to read, it's too small. Simply selecting a larger sized font is not a good solution, as this cuts down on the number of lines of text that will fit on a screen at one time. Also, most word processors will only let you use the default screen font, normally Topaz 8. Running *SetFont* (a freely distributable program) lets me select a different font, but using anything other than an 8-pixel font confuses Workbench, and makes a mess of menus expecting an 8-pixel font.

Running word processing programs on an interlaced screen doubles the number of lines available for text, at least for those programs intelligent enough to recognize the larger screen. However, the interlace flicker makes working for more than a few minutes an impossibility. I had tried wearing sunglasses, putting smoked plexiglass in front of my monitor, and devising esoteric color combinations on the screen, all to no avail. The next step was to install a FlickerFixer.

The FlickerFixer is a specialized frame buffer for the A2000 that sits in the video card slot. It stores the two video fields, each with 262.5 lines and interlaced on the screen, and outputs a single video frame with a full 525 lines non-interlaced. To display this non-interlaced image requires a monitor that can handle a higher bandwidth signal. VGA or multi-scan monitors work just fine. I selected a Taxan 770+, a multi-scan monitor with some fancy features.

The Taxan not only handles the 31.5 KHz non-interlaced signal produced by the FlickerFixer board, it will also display the Amiga RGB signal (15.75 KHz), and a standard composite video signal. It also has separate adjustments for horizontal and vertical size and position for each of these signals. This keeps the image from jumping around the screen when I switch display modes. It also has a great overscan button that enlarges the screen image right to the edge of the screen if you don't set up the horizontal and vertical sizing from the presets.

My new monitor came with a 9-pin to 9-pin cable, perfect for the 9-pin connector on the FlickerFixer, but it was wired incorrectly. It turned out I had to switch two wires to get the monitor connected correctly to the FlickerFixer. Pulling apart a factory assembled shielded cable is not an easy task, and the wood burning tool I use for a soldering iron tends to have a deleterious effect on the tiny wires used in such cables. Eventually I was able to get the cable wired correctly and reassembled.

Running word processing programs on an interlaced screen doubles the number of lines available for text, at least for those programs intelligent enough to recognize the larger screen. However, the interlace flicker makes working for more than a few minutes an impossibility.

Reality Check

The first time I booted my Amiga with the FlickerFixer was a remarkable experience. Everything on the Workbench screen was twice as high as normal. I ran Preferences, selected an interlaced Workbench, and voila!—suddenly everything jumped to the top half of the screen. Stupid me, I had expected that AmigaDOS would be able to recognize that I was running in interlace and enlarge the icons and windows on-screen to take advantage of the extra space. This was only my first disappointment.

I had been in the habit of running an overscanned Workbench screen. The normal Workbench is 640 X 200. By using *MoreRows* (another freely distributable program) I had widened the Workbench screen by eight pixels, sufficient to leave room for 80 characters across and the borders that most programs wanted to impose on my display as well. This now left me running a 648 X 400 display.

There is no such thing as a free lunch. *MoreRows* may make it easy to steal space from the overscan border and use it as display space, but doing so increases the amount of time the Amiga needs to draw a horizontal line. This time has to be stolen from somewhere. Adding an interlaced screen to the display demand increases load on the display processors. Eventually it's possible to ask too much of the system. I found out what happens when you do.

The first symptom was that some screen hack programs like *Yaboing* looked very odd when run. *Yaboing* puts a bunch of bouncing Boing balls on the screen. When I ran it, one of the balls turned into a vertical bar of garbage on the screen. Then I began to have problems running some animation display programs. Taken to an extreme, this is the same problem that comes up when running a standard Amiga in high-res while trying to access a DMA hard drive like the 2090 controller. The villain was a loss of DMA cycles. The cure was absurdly simple.

When you run Preferences, there's a gadget in the middle of the screen used to center the display. Dragging the gadget around moves the image around on the screen. Generally you just center the image. It turns out, however, that the position of the image affects the number of free DMA cycles. The further to the left you position the image, the more DMA cycles disappear. Move it to the right and you free up DMA cycles. I moved the Preferences gadget to the right and the mangled *Yaboing* sprite reappeared. I then readjusted the horizontal positioning screw on the Taxan monitor to re-center the image, and was off and running.

Word Processing Meets Flicker-Free Video

The next step was to find a word processor that would take advantage of the additional real estate on my screen. I had been using *WordPerfect*, and

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Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

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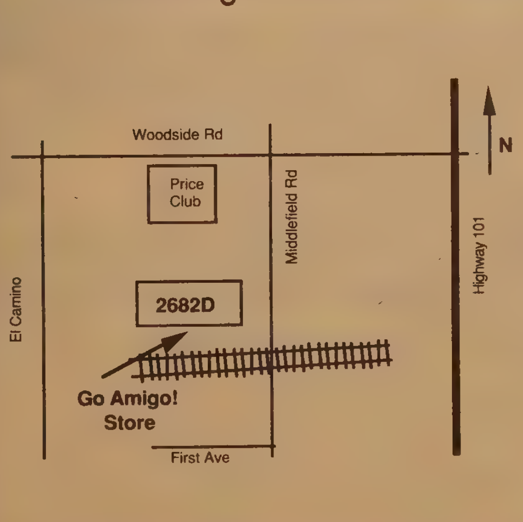

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had just about gotten used to its peculiar ideas of an Amiga interface, as well as its slow speed and multiple screen refreshes. The addition of a few well-constructed macros made it tolerable, but the first time I tried to use it with my new setup, it gave me a one-way ticket to the mystic show. I tried running it from the CLI with the -S flag to try resetting some parameters, but no luck. A call to their support line supplied the answer (which was unavailable in the manual). I had to delete a parameter storage file, then run the program.

WordPerfect let me run a full screen display, but it refused to support a font larger than eight pixels. Forty-eight lines of 8-pixel text is no fun. *Scribble* also refused to understand a font larger than eight pixels.

Excellence was out of the question as it runs even slower than *WordPerfect*, so I tried *ProWrite*. *ProWrite* supports an interlaced screen, lets you use any font you want, and even handles graphics, although I never add graphics to my documents. I ran *ProWrite*, loaded a document, and converted it to Topaz 11. It looked great.

Then I tried to scroll down a screen. Instant flicker. Hundreds of dollars' worth of hardware designed to eliminate any trace of flicker from my screen, and I find a word processing program that flickers anyway.

It turns out that *ProWrite*, an eight-color program, uses three bit planes. This is just simple math, 2 X 3. All three bit planes cannot be refreshed at the same time. The flicker is caused by the final bit plane being refreshed out of sync with the first two. Switching the text color from black to blue solves the problem, as it now gets refreshed along with the rest of the display.

Between the time I discovered the flicker in *ProWrite* and the arrival of the fix from their technical support, I received a review copy of *Transcript*, a new word processor from Gold Disk. *Transcript* is a bit of an odd beast. Imagine *Scribble* with most of the interface problems removed, or a text editor with some word processing functions thrown in. For me, the major attraction was that *Transcript* would support an interlaced screen and use an 11-pixel-high font.

Transcript has a lot of other great features as well; good spelling checker, macros, index creation, mail merge, auto-hyphenation, lots of customization possibilities—and it's fast. On the down side, it uses embedded formatting commands, doesn't have a thesaurus, and won't let you write a plain ASCII file if you've embedded formatting commands in a file. It uses the same commands as *Professional Page* for formatting, and has a special menu item that lets it send text directly to *ProPage* if it is running. I plan to use *Transcript* for a while to see whether it will be the word processor I use full time, but for now it's well worth a look. ■

Resources:

FlickerFixer
Microway
PO Box 79
Kingston, MA 02364

Taxan USA Corp.
161 Nortech Pkwy.
San Jose, CA 95134

MoreRows
Fish Disk #54
By Neil Katin and Jim Mackraz

Yaboing
Fish Disk #36
By Ali Ozer - based on a program by Leo Schwab

Word Perfect Corp.
288 West Center Street
Orem, UT 84057

Scribble
Micro-Systems Software
12798 W. Forest Hill Blvd. #202
West Palm Beach, FL 33414

ProWrite
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206 Wild Basin Road #109
Austin, TX 78746

Transcript
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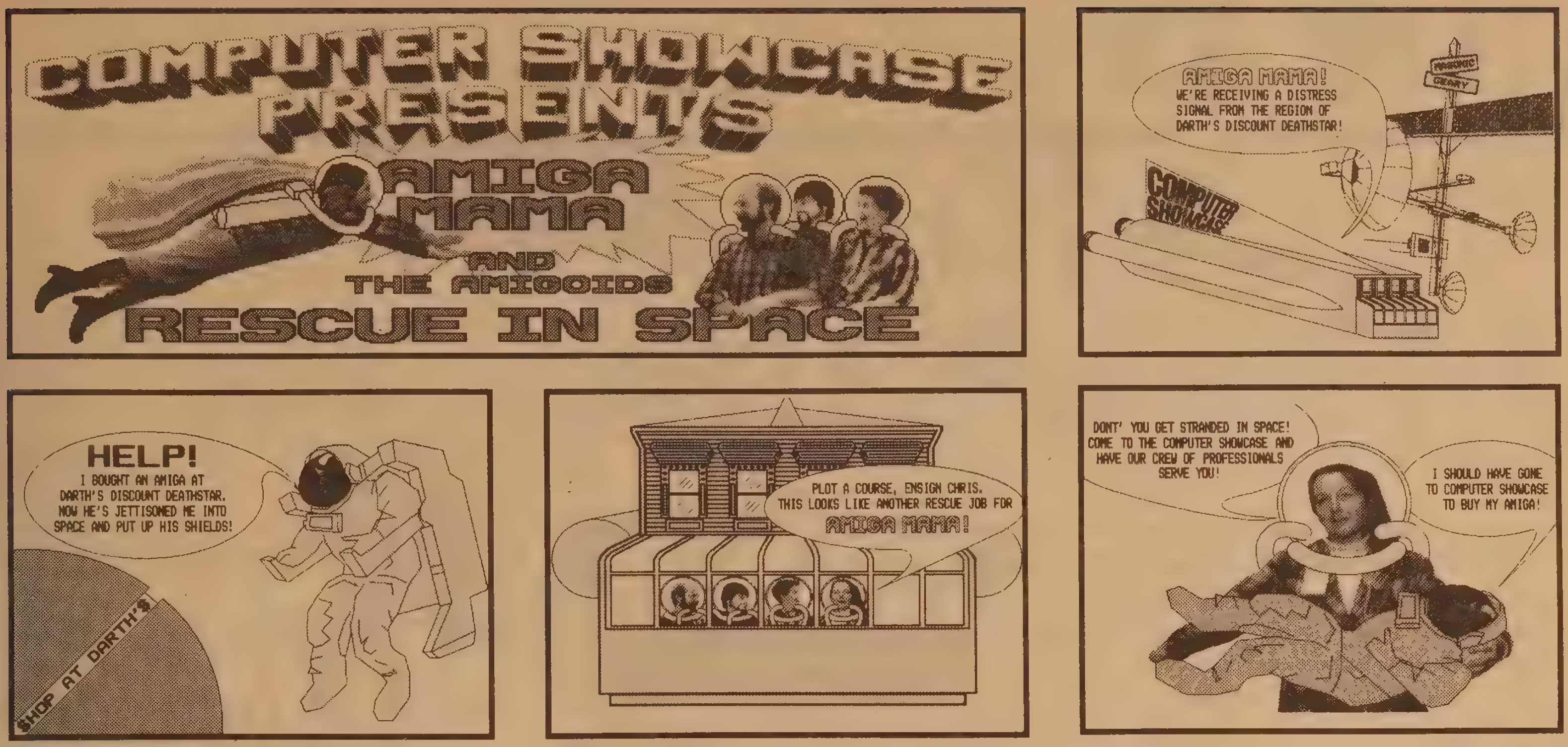
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"Amiga Mama and The Amigoids" was created by **George Christensen**. This ad was assembled at Computer Showcase on an Amiga 2500 using Professional Page, DeluxePaint III, DigiView and The FrameGrabber.It was printed on a Linotronic L200 at: **Giraffe-X Desktop Publishing's AmigaZone** - 1826 Divisidero Street, San Francisco 567-5780 / 346-9166.

ATARI ST

BY DAVID HAWKINS

So It Wants To Be A Mac—

Using An Emulator

A couple of months ago I briefly covered the different types of computers that the Atari could emulate. One of these is the Macintosh, and the product used is called Spectre 128. It was written by Dave Small, who did the Magic Sac, the first Atari device for running Mac software.

What Is Spectre?

The only legal way to run Macintosh programs involves using the ROMs from a Mac. The Spectre is a cartridge that you plug the ROMs into, plus the software that lets the Atari use those ROMs. (The ROM chips are Read-Only Memory; they hold the instructions that the Macintosh programs need to run under the Mac interface.) Spectre also includes an Atari program that helps set up the disks you need to use to run Mac programs. (The Spectre 128 is available from Gadgets by Small, Inc., 40 W. Littleton Blvd.,#210-211, Littleton, CO 80120, 303/791-6098.)

Getting The ROMs

The ROMs are made by Apple. There are two kinds of ROMs that you can use in the Spectre—either 64 K or 128 K. The 64 K ROMs are those that were used in the original Macintosh. A lot of these became available when people started doing Mac upgrades.

The 64 K ROMs will allow you to run a lot of the original Mac software. The 128 K ROMs are needed to run *HyperCard* and some of the other advanced Mac software. It is possible to buy the 128 K ROMs that are manufactured by Apple, but I don't know where they come from.

When I picked up my copy of Spectre from a local dealer, it already had the 128 K ROMs in it. It also included a list of places that are selling the 128 K ROMs.

HyperCard?

Yes, the Spectre will run *HyperCard*. If you're looking for an inexpensive way to play with *HyperCard*, the combination of Spectre and an Atari is a good way to go. *FullWrite* and *PageMaker* and other Mac programs run as well on Spectre as they do on the Mac. (I included a little hedge in that last sentence because I have had a rough time running Mac programs on the Mac. I'd much rather use *Timeworks Desktop Publisher ST* on the Atari than *PageMaker*. But if you've got to use *PageMaker*, Spectre is one way to do it.)

Copyright © 1989 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco both monitors, an Okimate 20 color printer, and disks all over the room.*

Moving Programs Over

To use a Mac program with Spectre isn't always easy. First, you need a legal copy of the Mac program. Second, you can't use a Mac disk in the Atari disk drive. (You can if you get *Translator One* from DataPacific, so that is one option.) Spectre uses its own format for disk storage.

So how do you move a program to a Spectre disk? The easiest way is to get someone else to do it for you. (That's my favorite!) There are user groups that have moved some of the more popular Mac public domain programs to Spectre formatted disks. Your local dealer might also have some programs available that way.

Another way to get Mac programs is from bulletin board systems. Of course, to do that, you need at least one Mac telecomm program on a Spectre disk, so see the previous paragraph. The problem I ran into with the telecomm approach is that I didn't know how to use Mac programs like *BinHex*, *PackIt*, and *StuffIt*. If you know Macs well enough to unpack Mac programs, the telecomm approach might work for you.

Yet another way is to hook up a Mac to the Atari using a null modem cable. I didn't try it, but it's supposed to work.

Got A Hard Disk?

If you're going to spend much time running Mac programs, you'll really want a hard disk. Doing 40 disk swaps to start up a program gets old real fast (and no, I'm not making that up).

You can format a hard disk so that one partition is for Atari programs, one is MS-DOS, and one is for Macintosh. One of the programs that comes with Spectre will do this for you.

Once you've got the hard disk formatted, you can move a Mac System Folder to it and boot from it when you start up Spectre. The speed improvement is great.

Running As A Mac

Once you get the Atari booted as a Mac using Spectre, you need to know how a Mac operates. The Spectre documentation is a good start—it explains what keys on the Atari to use for the corresponding keys on the Mac. It also tells you why you need to be careful with disk swaps and with shutting down the system. But after a certain point you need to have some Mac experience.

I use a Mac every day at work, so I'm used to the Mac system. But if you haven't used a Mac, you might be better off running Atari software instead of getting Spectre.

If you're looking for an inexpensive way to play with HyperCard, the combination of Spectre and an Atari is a good way to go. FullWrite and PageMaker and other Mac programs run as well on Spectre as they do on the Mac.

The Next Step

Dave Small is planning on releasing a new Spectre in the next couple of months. Called the Spectre GCR, it will be a "plug in and use as a Mac" program. You won't have to transfer Mac programs to Spectre disks, but will be able to use Mac disks directly. This will greatly simplify using the Atari as a Mac.

I think this is due to hit the market in August or September of this year. If you want to get the Spectre that's currently available, you'll still be able to upgrade when the new one comes out.

A Cautionary Note

There's an illegal Mac emulator that's available on some BBSes. Avoid it. Any emulator that does the emulation with only software is illegal—you've got to have the Mac ROMs. Personally I'd rather support Dave Small since he did the innovative work of producing a great program. ■

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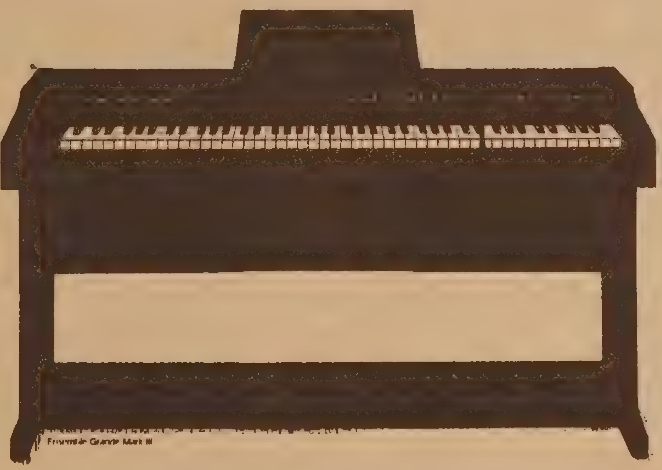

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Located right above the Mark III's 88-note keyboard, a streamlined control panel makes it easy to summon any of the instrument's 100 presets. Simply push a button to call up a sound. Then take that sounds and choose any of 9 other variations just by pushing another button. You can further personalize the sound effects like Chorus, Tremolo or Vibrato.

The Mark III even provides preset selections that combine instruments' sounds, such as grand piano on the right half of the keyboard and acoustic bass on the left half. It's multi-timbral too, which means you can play more than one sound at a time- piano layered with strings, for example. And with 24-voice polyphony, you'll hear sonic depth and complexity like you've never heard before.

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The Ensemble Grande Mark III is a wonderful self-contained music system, whether you use its own powerful, high-quality speakers or connect it to an external sound system. But beyond that, the Mark III is equipped with a MIDI interface. MIDI (the Musical Instrument Digital Interface) is the standard that has been developed by manufacturers to allow their products to "talk" to one another. A single cable is all it takes to connect the Mark III to any MIDI-equipped external device, such as a sequencer, computer or other musical instrument- like the Kurzweil Ensemble Expander- for even more sounds.

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USER GROUP NETWORK

BY MARY EISENHART

Shows, Robots, And Commodore Clones

July looks like a busy month in user group land, with a host of events coming up for a variety of interests.

On Wednesday, July 12, the Berkeley chapter of the **Society for Technical Communication** will meet from 5:30 to 7 pm at Cody's Bookstore on the corner of Telegraph and Haste in Berkeley. STC members will present "True Confessions: How We Got Into Technical Communication." (Judging by the diverse backgrounds of *MicroTimes* writers, there ought to be a few good stories here…). There's a charge at the door of $3 for members and $5 for non-members, and if you'd like more info, the person to call is **Marla Wilson** at (415)549-3801.

Then on July 21 the **3rd Annual A/E/C Systems Review** will take place at the American Institute of Architects/SF Chapter's headquarters at 130 Sutter Street in San Francisco. This is an annual review of What's Hot and What's Not in computer applications for architecture and construction, and its purpose is to distill information from the annual A/E/C Systems trade show, this year's version of which recently took place in Anaheim. It's presented by the **AIA/SF Computer Forum** and three Bay Area *AutoCAD* user groups, and features two panels on hardware and software issues. Local experts from Apple, Autodesk, and other companies will speak on the panels. Registration is $8 for members of AIA/SF or the **San Francisco/Marin, East Bay**, and **Sonoma AutoCAD Users' Groups**, $10 for non-members, $12 for all at the door on the day of the show. For more info, or to preregister, call AIA/SF at (415)362-7397.

The first meeting of the **Tri-Valley AT&T Computer Users Group** will take place on Thursday, July 20 at 6:30 pm. Admission is free, and the location is 5794 West Las Positas Boulevard in Pleasanton. For further information, call **Joe Mahoney** at (415)540-2219.

Robotics fans take note: **James P. Cruse** of Capitola files a report on **Home Robots Now!**, which, he says, is "a group dedicated to getting robots working in the house NOW!"

As for what the group does, well, here's what James has to say: "We have been meeting for almost two years now, and are currently building an autonomous robot for navigating in a house. We are currently meeting the second Thursday of every month, and are looking for people interested in the hardware or software aspects of robotics." To find out more about Home Robots Now!, call James at (408)475-7444, or write him at 919 Capitola Avenue, Suite 41, Capitola, CA 95010.

A month or so ago, I passed along an inquiry by **Duane Peterson** of Concord, who had bought a **Commodore PC clone** and hadn't felt too welcome at the local Commodore gatherings. He was looking for some groups that specialized in the Commodore clones; as an interim measure I steered him toward a few local PC groups.

Well, this month's mail brings a letter from **Joel M. Rubin** of San Francisco: "Two of the old-line Commodore groups in Canada and England do maintain MS-DOS libraries. **Toronto Pet Users' Group, Inc. (TPUG)** is at 5334 Yonge St., Suite 116, Willowdale, Ontario M2M 6M2. Their phone number is (416)733-2933, and the office is open Monday to Friday, noon to 5 pm Eastern. US Associate membership costs US$25. Disks are $5-$10-$10-free (fourth disk of an order is free), which isn't that wonderful considering the huge number of sources of MS-DOS non-commercial software. Membership used to include a commercial magazine subscription with a special insert, but they are now sending out a newsletter and offering membership discounts on various commercial magazines. This may improve, as they just got over a crisis.

"**Independent Commodore Product Users, Ltd. (ICPUG)** has Mr. Jack Cohen as its membership secretary, and he is at 30 Brancaster Rd., Newbury Park, Ilford, Essex, England IG2 7EP. His day phone is 011-44-1-597-1229, and his evening phone is 011-44-1-346-0050. Overseas airmail membership is £26/year plus a one-time £1 share of stock in the co-op. To get a disk you send a disk, mailer, and sufficient British stamps or International Reply Coupons to send them back—no charge. Of course, since post offices charge about 2 1/2 times as much for an IRC as they give you if you redeem them, the postal charges can add up. Membership includes a thick, somewhat technical, semimonthly magazine that rarely has anything on MS-DOS. (It is, however, one of the better technical sources for other Commodore computers.) There are also member discounts, but since British prices tend to be higher to begin with…"

Joel also wonders whether Duane wouldn't be better off going to the local PC group, but in case any of you Commodore fans of whatever stripe feel like a little foreign cultural exchange, you might want to get in touch with one or both of these groups.

That's it for now—please keep that information flowing in our direction and we'll do our best to pass it along. US Mail goes to User Group Network, 5951 Canning Street, Oakland, CA 94609. Email can be sent to **microx** on The WELL (415/332-6106), **{pacbell, hplabs,ucbvax, apple}!well!microx** from Usenet, **MICROTIMES** on MacNET, and **bex754** on The Source. Faxes are also welcome: (415)652-4618 and (213)467-5486. ■

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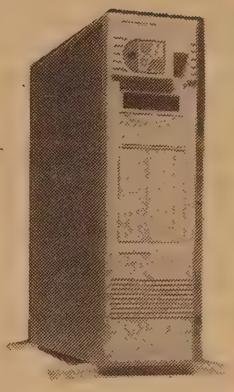

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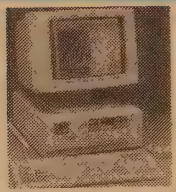

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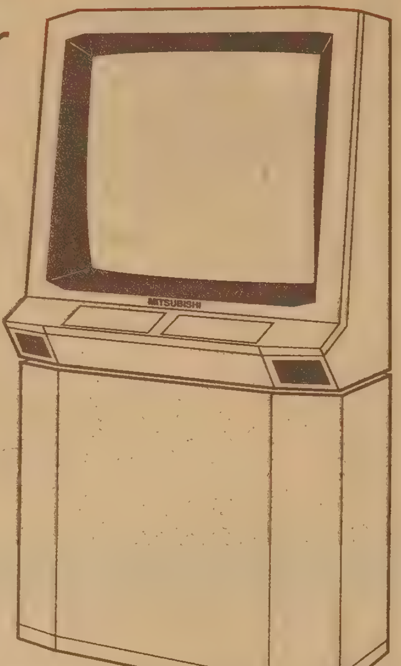

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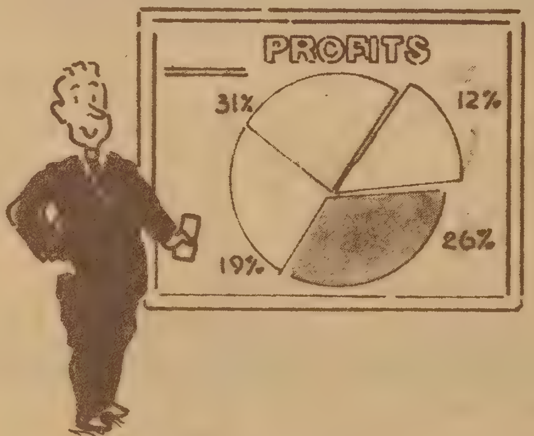

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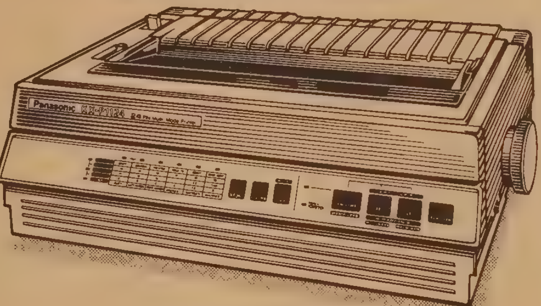

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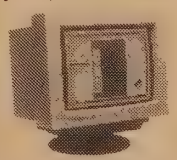

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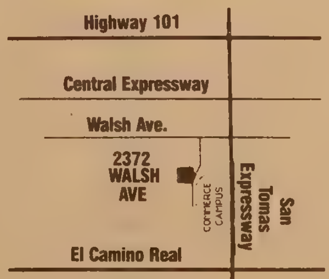

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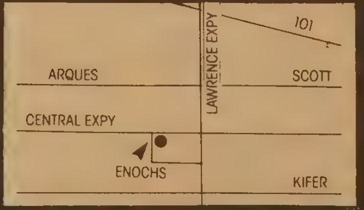

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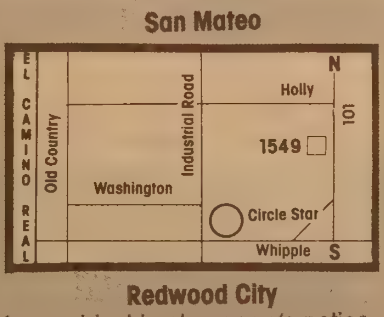

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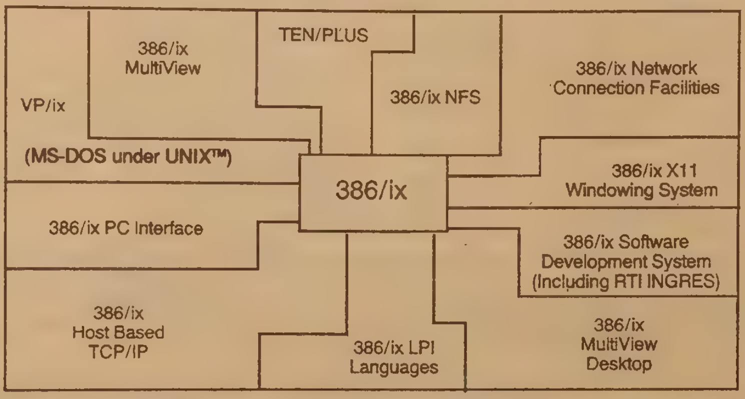

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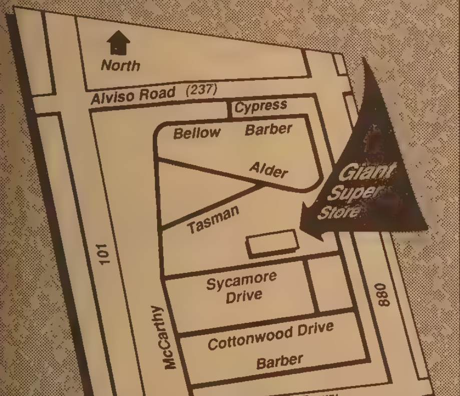

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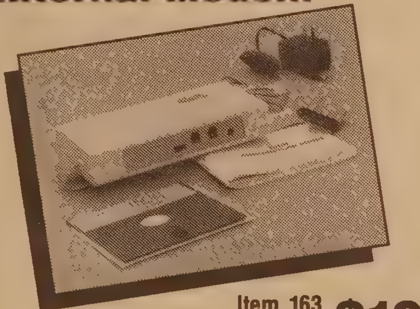

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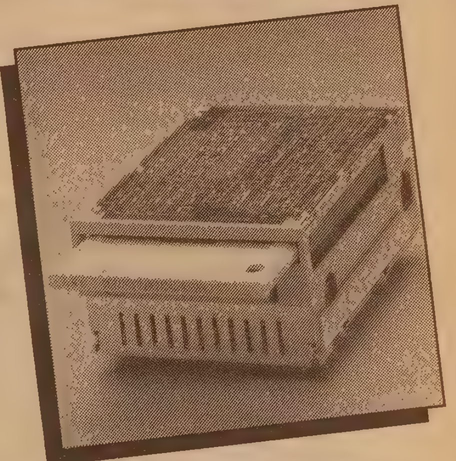

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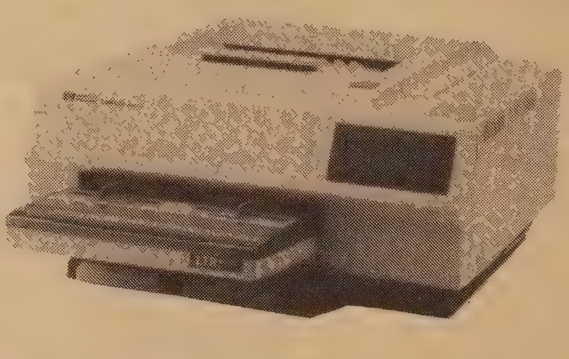

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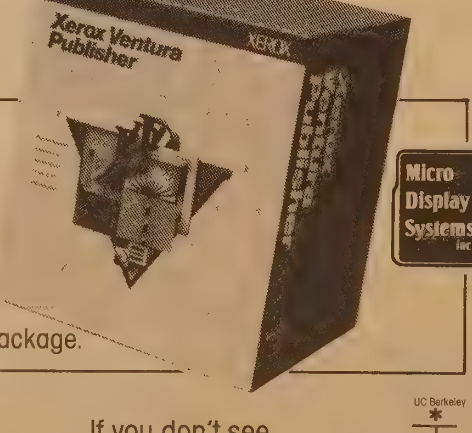

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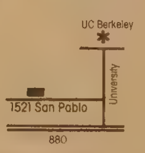

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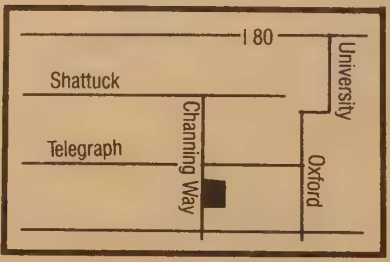

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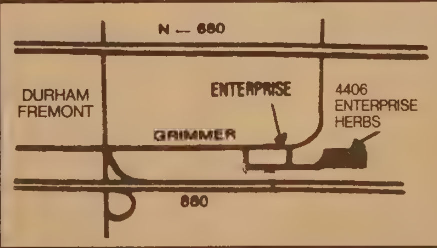

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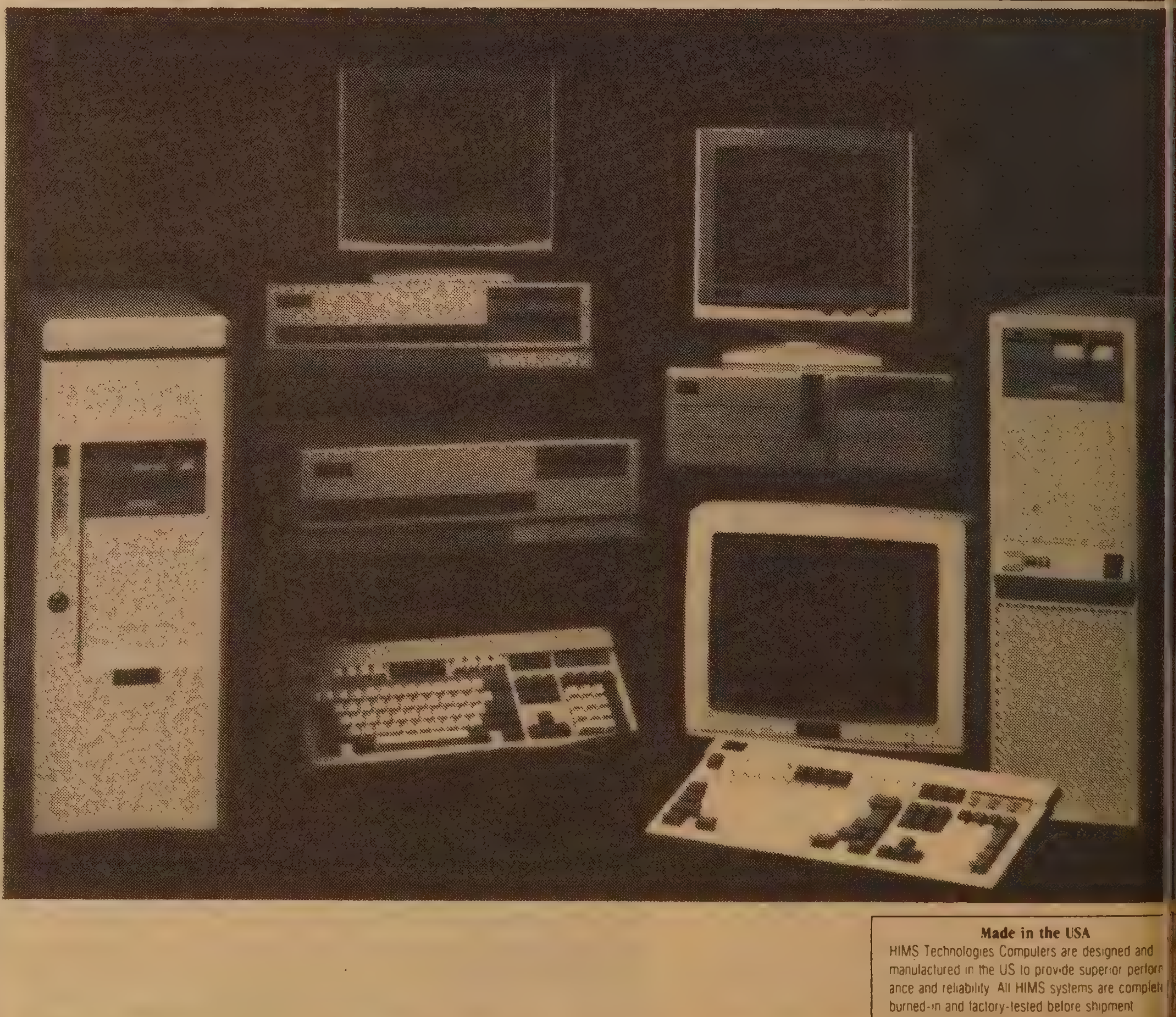

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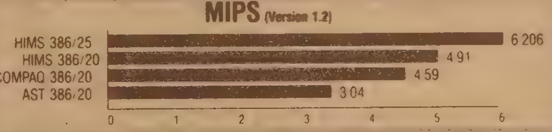

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Hackney's Hideout BBS. (916) 961-1042. 1200/2400 8-N-1. Includes AT&T users conference. Sysop: Rich Hackney.

Night-line Network Central. (916) 427-1107, 300/1200, 8:00 PM to 8:00 AM daily. Forum for individuals, clubs and organizations that want to network nationally with others. Sysop: Eric Thomas.

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ASSOCIATIONS

Account-A-Call National Users Group (AACNUG). First meeting in Universal City June 19–20, 1989. National user group for Account-A-Call service bureau and software customers with members drawn from nearly 1000 companies nationally. Call: Shelly Schoenberger, 1-800-447-TUMS.

AI Expert Systems for Business (ESB). Meetings: 1st & 2nd Suns., San Francisco. Business PC expert system solutions. Determine market opportunities, group research projects.

ANImated People User's Group In the spirit of Max Headroom and "Hitchhiker's Guide," we're attempting computer digitization/animation of real-people personalities. San Jose. Call: Tom, (408) 226-9225.

Artificial Intelligence Special Interest Group (AISIG). Call Rita Zokaei, (415) 574-8225.

Artificial Intelligence Special Interest Group. Meetings: 2nd Thurs. Engineering 101,Santa Clara University. Independent nationally recognized group studying and developing AI and artificial neural networks. Call Kent Byron (408) 244-8739 for info.

Association for Women in Computing. Meetings: 1st Wednesday of each month, 6:30 PM, Stagecoach Restaurant, 44 Montgomery St., San Francisco. Call 655-3110 for information.

BAY HPX. Meetings: 2nd Saturday Laptop & handhelds. Call Jim Horn or Michael Felsenstein: (707) 794-3130/(415) 564-8279.

Bay Area CYMA Dealers Association. Meetings: 2nd Tuesdays, Thursdays; 4:30-6:30 pm, San Mateo. Networking and support for McGraw-Hill accounting software consultants and retailers. Call: (415) 345-5955.

Baytalk Computer Users Group. Write: PO 369, Berkeley 94701. BBS: (415) 864-6430, 300/1200, 8-N-1.

Business Computerization User Group. Group forming. Write 6938 Buckingham Blvd., Berkeley, CA 94705, or call (415) 848-2080.

California Genealogical Society Computer Interest Group. Meetings: 2nd Sat.- odd months Genealogical Society Library, San Francisco.

Computer Associates Users Group. Meetings: 3rd Wednesdays, 6:30 pm, 1500 Van Ness Ave., Call: Brenda Goldstein, (415) 864-6770.

Computers & Law Assoc. Meetings: McGeorge School of Law, 3200 Fifth Ave., Sacramento, CA 95817.

CYMA/McGraw-Hill Users Group Meeting. Meetings: Monday, October 24, 3:00-5:00 pm, McGraw-Hill Publications Building, 425 Battery St., San Francisco. Meet CYMA professionals and learn how to get the most from your software. Call: (415) 839-7466.

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East Bay User Group. Meetings: 3rd Wednesdays, 7 pm, 12500 Campus Dr., Oakland, Rm R-7, Call: (415) 436-2453.

Entrepreneurial Support Group. CEO. Meetings: SASE, P.O. Box 2781, San Rafael, CA.

Ham Radio Computer Packet Group. Meetings: 2nd Fridays, 8 pm, Salvation Army, 4600 Appian Way, El Sobrante. Learn how to use your computer to broadcast all over the world with the fascinating world of Ham Radio. Call: Bob Fields, (415) 237-3761.

High Tech Gays. Meetings: 2nd Sundays, Part of the National Gay & Lesbian Task Force. Call: (408) 993-[illegible]830.

High Technology Entrepreneurial Council. Meetings: Wednesdays, 6:30 pm, Piedmont Community Center, 711 Highland Ave., Piedmont. HTEC is a nonprofit corporation dedicated to providing software developers and other high tech entrepreneurs a forum for developing marketing strategies, building business relationships and exchanging experience and information. Call: Rachel Munoz, (415) 339-3895

Microcomputer Users of Santa Cruz Fog Affiliate #116. Meetings: 2nd Thursdays, Green Acres School, 966 Bostwick Lane, Santa Cruz. This facility is wheelchair accessible. Call: Barney, (408)476-0504.

MORE: Modemusers Of The Redwood Empire. Meetings: Thurs. July 14; Fri. Aug. 9; 7 PM, Roundtable Pizza, Highway 12 @ Stony Pt. Free membership for modemers who want to get together and talk about local boards. Includes novices to techno-wizards. Call (707) 546-5203.

Mt. Diablo Technology Association. First meeting: Wednesday, Sept. 14. Others monthly at Michael's Restaurant in Walnut Creek. Lunch and evening meetings, send for calendar. Back by popular demand. Will explore common concerns in industry and educational developments. Call: Deborah Scott, (415)932-4828

Network Users Group (NUG). Next meeting: July 7. Call for location and time. Panel discussion of workgroup software with several major software manufacturers represented. Call (415) 655-6500 for details.

North Bay Users Group (NBUG). Meetings: 2nd Thurs. 7:30-10 PM 201 Maine St., Vallejo, CA. Family Computer Club dedicated to all forms of computing.Determine market opportunities, group research projects. (415) 564-6669.

Northern California User Group. Meetings: Every 3 months. For schedule, Call: Ken Lebeiko, 881-2652.

Nota Bene User Group. Meetings: 3rd Tues. or Thurs., 7:30 PM Berkeley or Peninsula. For location and date, call Thomas Ross, (415) 845-2410.

PASS: Professional Association of Secretarial Services. Meetings: 2nd Saturdays 11:30 AM, Oakland or San Mateo. Call: Nina Feldman,(415)655-4296.

Pracsa, for Sysops & Users. Meetings: 2nd Wednesdays, 6:30 pm, Coco's Restaurant, 1305 South Mary, Sunnyvale. Call: Bill Strouse, (408) 453-3321.

ProTel (Professionals In Telecommunications) Meetings: Monthly. Holiday Inn, 1221 Chess Drive, Foster City. ProTel is a network organization for people interested in telecommunications.Leave a message at (415) 227-5637 for information.

San Jose User Group. Meetings: First Wednesdays. For location and time, Call: Hanna Varniz, 984-8484.

SEF Marketing SIG. Meetings: Oct. 27—Telemarketing; Nov.

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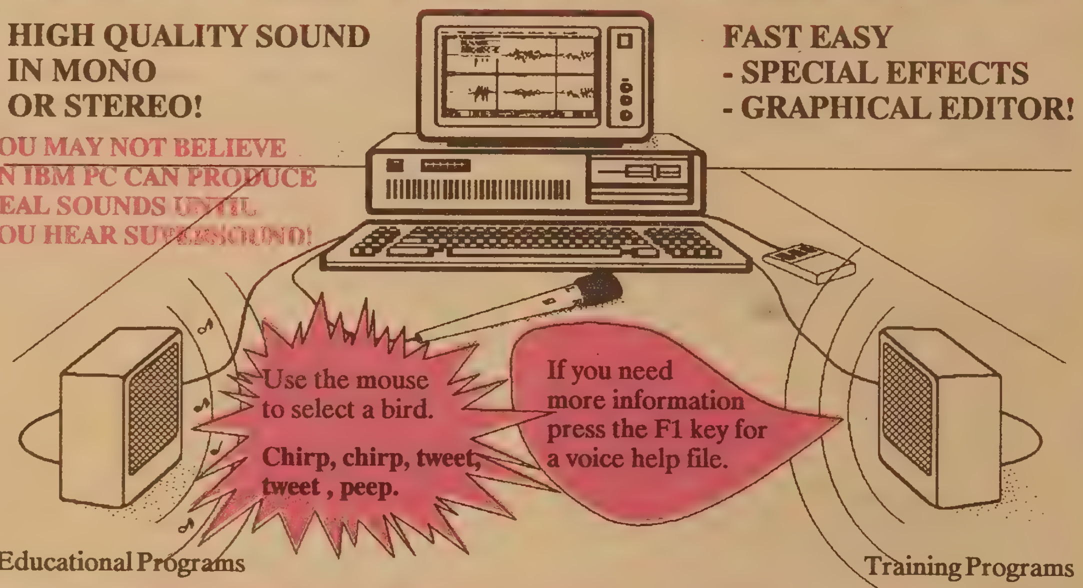
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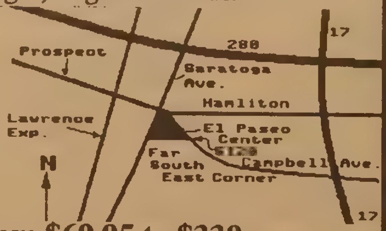

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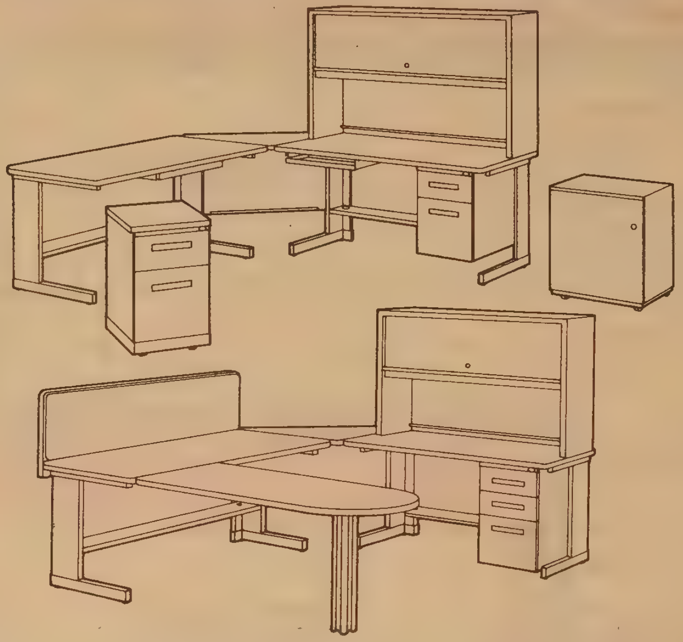

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Silicon Valley Computer Society. Contact Kent Stafford (408) 286-2969. Or write to 2464 El Camino Real #190, Santa Clara, CA 95051.

Society For Technical Communication. Meetings: 2nd Wednesdays, Berkeley. International association of technical writers, editors, illustrators, and instructional designers. Call: Rae Montor, (415) 531-2315.

Software Entrepreneur's Forum (SEF). Meetings: 3rd Thurs. 1875 Embarcadero Rd., Palo Alto. Helps individual software developers and startup software companies. Call for complimentary newsletter. (415) 854-7219.

Technology Executive Roundtable (TER) Meetings: Fourth Tuesdays, 6:00 pm, Santa Clara.Call: Jenny Hoyt,(408)997-1826.

The Hispanic Computing Association. Meetings: 3rd Thursdays, DataDesigns/American Music, 2388 Mission St., SF. Spanish/English Computer Information, PC & Mac presentations and solutions. Call: Juan Lira, (415) 824-8337.

The Society For Technical Communication. Meetings: 1st Wed. 7:00 PM Room #3, SMUD Facilities, corner of Elkhorn and Don Julio, Sacramento. Devoted to the advancement of the theory and practice of technical communication.

Valley of the Moon Users Group. Meetings: 2nd Saturdays monthly, 10:00 AM, Moose Lodge, Sonoma. All systems welcome. BBS, 300 BAUD, 24 hours, (707) 996-7922.

Women's Special Interest Group. 7:30 pm, Hewlett-Packard, 5301 Stevens Creek Blvd., Santa Clara. For all women interested in computing. Call: Rita Zokaei, (415) 574-8225

USER GROUPS

AMIGA

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meeting and library sessions 2nd Tuesdays, 7 pm at Livermore Airport Terminal building. Paul Tibbals (415)829-6053 for details.

Amiga Addicts Anonymous. Meetings: Newsletter, public domain library, demonstrations. Write PO 4669, Walnut Creek, CA 94596. Call: 689-3453

Amiga East Bay Info Exchange (AEBIE). Meetings: 2nd Tues. 7 to 9 PM 11185 San Pablo Ave., in El Cerrito. Write to P.O. Box 485, Pinole, CA 94564.

ASCITEC: The Amiga Science & Technology Users Group. Meetings: 2nd Thurs. 5-7 PM Lockheed, B/157, Rm. 4-C, Sunnyvale, CA. Scientific/Video Applications. Classes available.

AUGment - Amiga Users Group of Silicon Valley. Meetings: 2nd Fri. Write to P.O. Box 1863, Fremont CA 94538 for more info.

AUM—Amiga Users Of Marin. Meetings: Third Wednesdays, 7:30 pm, room 191, Science Center, College of Marin, Kentfield. Call: Bob Galvan, (415)924-5384.

Bay Area Amiga Developers Group (BADGE). Meetings: 3rd Thurs. 8 PM Turing Auditorium, Stanford University, Stanford, CA. For all Amiga programmers. No membership fee.

CWEST Bay Area Commodore Users Group. Meetings: Third Thursdays, 7:00 PM, Fort Mason, Bldg. C, Rm. 215. Support C-64/128 and Amiga. New Users welcome. Write PO 146731, San Francisco, CA 94114-6731.

HAUG (Hayward Amiga Users Group). Meetings: 1st Wednesdays, 7 pm, Mulford Gardens Community Center, San Leandro. Call: Ken, (415)352-0220, or Kenny, (415)351-7349.

Northern California Amiga Club. Meetings: Second Saturdays, 2 pm, Rico's. Supports Amiga. Write: PO 54, Bella Vista, CA 96008.

SMAUG (Salinas-Monterey Amiga Users Group). Meetings: 3rd Tues. at 7 PM, Seaside Library, 550 Harcourt Ave., Seaside, CA. Write PO 776, Castroville, CA 95012. Call Richard Binsacca at (408) 678-2518.

SVAUG-Scotts Valley Amiga Users Group. Meetings: 2nd

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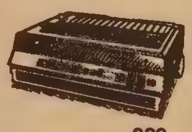

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AMSTRAD

North American Amstrad Users Group (NAAUG). National User group. For info send S.A.S.E. to NAAUG, P.O. Box 2178, Ferndale, WA 98240.

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APL Bay Area Users' Group. Meetings: 2nd Monday, 6:30 PM, I.P. Associates, 425 Sherman Ave., Suite 200, Palo Alto.

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Apple Pickers of the Redwood Empire. Meetings: 2nd Sat. 10 AM Santa Rosa JC, Shuhaw Hall, Rm. 1735. Call for sample newsletter. (707) 763-8322.

B.E.A.R. Apple II National Users Group. Meetings: send S.A.S.E. to B.E.A.R., 4719 Meridean Ave. #401,San Jose 95118. Printshop & Appleworks files, monthly newsletter.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

GravenStein Apple IIGS Users Group. Meetings: 3rd Saturdays, 10:00 AM, Coddingtown Mall, Santa Rosa. User group to explore new and existing programs and uses for the IIGS, to order equipment and material as a group for quantity discounts and to encourage the use and development of the IIGS among current, new and potential users. Call: Aaron Lamar, president, 938-8479.

San Francisco Apple Core. Meetings: 3rd Saturdays, 10 am, Daly City Library, 40 Wembley. BBS, SIGS, PD/SW library, Help List, Newsletter, more. Call: 398-2335/771-5830.

San Leandro Apple User Group. Meetings: 1st Thursdays, San Leandro HS, Rm. 213. New owners to experienced users welcome. AppleWorks, software and telecommunications SIGs meet monthly. Call: (415) 483-6046.

Society For The Prevention Of Cruelty To Apples. Meetings: 2ndWednesdays, 7:30 pm, Fremont Main Library, 39770 Paseo Padre Pkwy. Call: Dean Fern, (415) 537-3439.

Tri Valley Apple II Users Group. Meetings: 1st Thurs. 6:30 PM. Call Esther Farnstrom at (415) 829-3672 or Dan Balsey at (415) 828-6237 for meeting location.

ATARI

ABACUS (Atari Bay Area Computer Users Society). Meetings: 1st Saturdays, 19th Ave. Diner, 19th & Lincoln Aves., SF. Open to all Atari XL/XE and ST users. $20/yr. Call: (415) 753-8483.

Bay Area Atari Users Group (BAAUG). Meetings: General meeting and ST users meeting 1st Mon. 7:00 PM Bracher School, corner of Bowers and Chromite, Santa Clara. On 2nd Tuesdays. 8-bit users meet at H-P, Wolf and Pruneridge, Cupertino. BBS: (408) 247-1257.

COAST (California Original Atari ST Users Group). Meetings: 3rd Wednesdays, 7 pm, 2105 Bancroft, Berkeley. Call: (415) 945-1949.

Diablo Valley Atari Computer Enthusiasts (DACE). Meetings: 1st Thursdays, DACE supports all Atari computers. Newsletter, demos, raffles, DOMs, and programming SIGs. Call: Larry, (415)689-5160.

San Leandro Computer Club. Meetings: 1st Tuesdays, 8 pm, San Leandro Community Library. (415) 352-8118 & 887-2008.

AT&T

Bay Area AT&T PC Users Group - South Bay. Meetings: 2nd Wed. 6:30 PM AT&T Bldg., 1090 E. Duane, Sunnyvale, CA. Call: Joe Lipsig (408) 733-6522. BBS: (408) 462-6329.

Bay Area AT&T PC Users Group. Meetings: 1st Wed. 6:30 PM Alternates between Oak. & SF, Call: Joe Mahoney (415) 586-8376. BBS: (415) 829-6027.

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San Francisco/Marin AutoCAD Users Group. Meetings: 2nd Tuesday evenings. $20 annual membership fee & newsletter. For further info, call Volker, 331-9466.

Sonoma County AutoCAD Users Group. Call (415) 777-9144 for info.

COMMODORE

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meetings: 3rd Tues. 7:30 PM Community Room of Homestead Savings & Loan, 999 E. Stanley Blvd., Livermore, CA. Contact Ron Kremkow at (415) 449-1784.

Campbell Chapter of 64/More Commodore UG. Meetings: 4th Tues. BBS (408) 946-6154.

Commodore 64 Software Users Group For New Commodore Owners. One-on-one help for new owners. Meeting place & time TBA by members. Call (714) 531-2977 for info.

Commodore Connection Users Group. BBS (415) 458-1005.

Commodore Users Group Santa Cruz. Meetings: 3rd Wednesdays, 2395 Delaware Ave., Santa Cruz. Call: Ruth Wieland, (408) 688-2843.

Cupertino Chapter of 64/More Commodore UG. Meetings: 3rd. Sat. BBS (408) 946-6154.

CWEST Bay Area Commodore User Group. Meetings: 3rd Thurs. Fort Mason, Bldg. C, Rm. 215. Supports C-64/128, Amiga. Write P.O. Box 146731, San Francisco, CA 94114-6731.

Diablo Valley CUG. Meetings: 2nd Thurs. 7:30 1331 Concord Ave. For info write: Box 27155, Concord, CA 94527. Or call (415) 932-2413.

F.U.N.H.U.G. - Fremont, Union City, Newark, Hayward User Group. Meetings: 3rd Thurs. 7:30 PM Newark Public Library, 6300 Civic Terrace Ave., Newark, CA. A user-organized, user-operated user group not affiliated with any computer or software manufacturer or distributor.

Fairfield Commodore User Group. Meetings: 1st & 3rd Mon. Solano County Education Bldg. Write to P.O. Box 2778, Fairfield, CA 94533-9998 for info.

Marin Commodore Users Group. Meetings: 2nd Wednesdays, Redwood High. Call: 883-7748; BBS 883-2558—300/1200.

Mother Lode Commodore Users Group. Meetings: 2nd & 3rd Thursdays, 7:00 PM, Calaveras County Water District Board Room. Supports the Commodore PET, VIC, 64, Plus/4 C-16 & 128. Call: Larry Anderson, 754-5530.

Napa Valley Commodore Computer Club. Meetings: Third Mondays, Rapoport's, 2225 Brown St., Napa. Write to: PO 2324, Napa, CA 94558.

North Valley Chapter of 64/More Commodore UG. Meetings: 2nd. Sat. BBS (408) 946-6154.

PLUG (The Plus/4 Users Group). No regular meetings. Over 800 members internationally. Write to P.O. Box 1001, Monterey, CA 93942 for info.

San Jose Chapter of 64/More Commodore UG. Meetings: 1st. Sun. BBS (408) 946-6154.

Silicon Valley Commodore Club. Meetings: 4th Wed. 7 PM Hewlett-Packard, 5301 Stevens Creek at Lawrence & 280. C-64, C-128, & Amiga.

dBASE

dBASE Users Group of Marin & Northbay. Meetings: monthly, call (415) 488-0342 for info. Open membership, beginners through developers.

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First Publisher User Group. Members make up 8 1/2 x11 formats for newsletters & tip sheets. $35 annual membership. Contact Raul Ibanez (415) 550-0785.

PC Publishers Of Northern California. Meetings: 2nd Thursdays, 7 PM, 1415 Valencia St., San Francisco Newsletter, telephone hotline, reference library, education. Support Ventura, PC PageMaker, etc. Intro membership: $24/yr. Information: Al, (415) 661-9270 or Donna, (415) 826-6640.

San Mateo Ventura Users' Group. Meetings: 2nd Mondays, 7:00-9:30 pm, 619 Bradford, Redwood City. Workshops, lectures, demonstrations of new techniques, shortcuts. Call: Eleanor Church, (415) 726-3181, or Pam Sheble, (415) 574-2003.

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Dynabyte - Tahoe City Dynabyte Users Group. Swap, buy/sell - boards, parts, units. Write to Drawer 2629, Olympic Valley, CA 95730 for info.

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Eagle Computer Users Group. Meetings: 2nd Sat. 9:00-12 noon Tandem Computer , 10435 N. Tantau Ave., Cupertino. Call: (408) 972-1965.

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Easytrieve Plus Users Group. Next meeting: June 14, Hyatt Oakland. Call Debbie at Pansophic, (415) 573-7100. All users welcome.

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Epson Users of San Francisco Bay Area. Meetings: 1st Thurs. 7-10 PM Fort Mason, Bldg. C, Rm. 216, San Francisco, CA. For users of Epson (QX, Equity, PX-8). Presentations, support network, newsletter, public domain software.

FORTH

Forth Interest Group of Silicon Valley. Meetings: 4th Sat. 1 PM Oak Room, at Hewlett Packard, on Pruneridge in Cupertino. Call George Shaw at (415) 276-5953 for info.

Forth Interest Group, North Bay Chapter. Meetings: 2nd Sat. 1 to 5 PM South Berkeley Community Library, corner of Russell and Martin Luther King Junior Way. One block north of Ashby BART station. Contact George Shaw (415) 276-5953.

FOXBASE+

FoxBase+ User Group. PO 20607 Oakland, CA 94620. New group now forming. Call Rachel Cohen, (415) 465-3570.

GAVILAN

Gavilan User Group. Meetings: 2nd Thurs. 7 PM Lockheed Bldg. 162. Cal (408) 379-2774 for info.

HEATH

Bay Area Heath User Group (BAHUG). Meetings: 2nd Tuesdays, 7 pm, 2001 Middlefield Rd., Redwood City. Call: Ed Hayes, (415) 326-3311.

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HyperCard SIG/GMUG. Meetings: 2nd Wednesdays, 7 pm, 78 A Mars St., San Francisco. Call: 641-GMUG.

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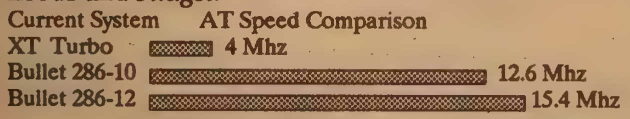

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CPU	80286-8	80286-8/10	80286-10/12	80286-12	80286-16	80286-12	80386SX-16	80386-20	80386-20
Math Co-po	80287-2/3	80287	80287	80287	80287	80287	80387SX	80387	80287/80387
Cache Ram	N	N	N	N	N	N	N	N	N
Dram Type	64/256K	64/256K	64/256K	64/256/1024K	64/256/1024K	256k/1M SIMMS	256/1M SIMMS	256/1M DIP	256/1M SIp/DIP
Mem Speed	150ns	120ns	100ns	120/100 ns	80 ns	100ns	100 ns	100/80 ns	100/80 ns
Mem Config	512/640K/1M	512/640K/1M	512/640K/1M	512/640K/1/2/4M	512/640K/1/2/4M	512K/1M to 6M	512K to 8MB	1/2/4/6/8/10 MB	1/2/4/8/16/32MB
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Berkeley PC/Compatible User Group. Meetings: 2nd Mondays, 7:00 pm, 2618 Telegraph Ave., Berkeley. No fee, bulletin board, public domain library. Call: Mel, (415) 526-4033.

C Language SIG/SFPCUG. Meetings: 2nd.Mondays, 6:30 pm, Kam's Rest.arant 2068 Center St., Berkeley. Call: Debee Norling, (415)644-1855.

Clipper SIG/SFPCUG. Meetings: 4th Mondays, 7 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: Michael Palladino, (415) 751-2719.

Columbia SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Dennis Tye. (415) 566-0587.

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DataPerfect SIG/SFPCUG. Meetings: 2nd Mondays, 7 pm, Kam's Restaurant, 2068 Center St., Berkeley. Call: Christy Quinn (415) 644-1855.

dBASE SIG/SFPCUG. Meetings: 3rd Thursdays, 7:30 pm, 6 No. San Pedro Rd., San Rafael. Call: John Stephenson, (415) 488-0342.

Desktop Publishing SIG/SFPCUG. Meetings: 4th Tuesdays, 7:30 pm, 179 Parnassus Ave., SF. Call: Phil Smith, (415) 566-3648.

Diablo Valley PC Users Group. Meetings: Walnut Creek, CA. Write: P.O. Box 8040, #117, Walnut Creek, CA 94596.

East Bay Fog. Meetings: Monthly meetings, Apostleship of the Sea, 600 Terminal St., Oakland. Newsletter, BBS. Call (415) 272-9099 for more info.

Enable SIG/SFPCUG. Meetings: 2nd Wednesdays, 7:30 pm, Walnut Creek. Call: Sandi Baker, (415) 946-1716.

Financial SW SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: Nick Maffei, (415) 668-2456.

FUNHUG—PC. Meetings: 3rd Wednesdays, 7:30 pm, Fremont Library, 39770 Paseo Padre Parkway, Fremont, in the Meeting Room. Mainly just the MS and PC DOS world. Send SASE to Russ Fischer, 2792 Arlington Place, Fremont 94555.

IBM & Compatibles Users Group (ICUG). Meetings: A mail-based user group with possible meetings. Not for PCjrs. $8/yr. Write: Dan Tuma, 30 Arjang Ct., Alamo, CA 94507-2041.

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IBM PC Users' Group Of The Redwoods (PCUGR). Meetings: 2nd Thursdays, 7 pm, Santa Rosa Vets Memorial, East Dining Rm. Newsletter, BBS, public domain & shareware disk library, $25/yr. Call: (707) 527-USER.

IBM Technical SIG/SEF. Teknowledge. Call for dates and time. Call: Mike Schmit, 244-6826.

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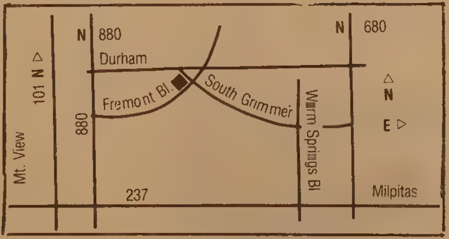

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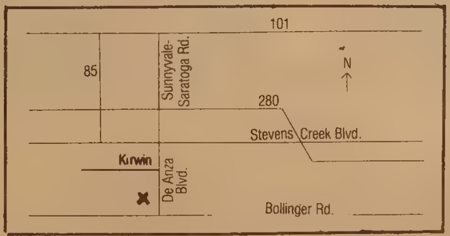

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San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

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San Francisco PCjr Users Group (SFPCjrUG). Meetings: First Sundays, 7:30 PM, Rm. C205, Fort Mason Center, San Francisco. Demonstrations and discussions, club library, disks for sale. Call: John King, 472-7035

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Solano Community PC Users Group. Meetings: 3rd Monday, 7 PM, Fairfield High School.

Solomon User Group Of Silicon Valley. Meetings: Wednesday, August 10, 6:30 PM, Conveyor And Storage Dynamics, 2581 Leghorn St., Mt. View. Call Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark, CA 94560; (415) 659-1515.

South Bay AT&T PC UG. Meetings: Call for info. Call (408) 226-0116.

South Bay WordPerfect User Group. Meetings: Monthly, 13650 Saratoga Ave., Saratoga. Call: Martin Van Derpool, (408) 238-8434.

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Berkeley Macintosh User Group (BMUG). Meetings: every Thurs. 6 PM Physical Sciences Lecture Hall, UC Berkeley Campus. SIG meetings on Mondays, Tuesdays & Wednesdays. Call for this week's topic. (415) 849-9114. BMUG, 1442A Walnut St., #62, Berkeley, CA 94709.

Christian Macintosh User Group, San Francisco Chapter. Meetings: 2nd Thurs. San Francisco. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913. Bible Study and DTP SIGS.

Christian Macintosh User Group, Silicon Valley Chapter. Meetings: 1st Thurs. San Jose. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913.

Desktop Publishing SIG/GMUG. Meetings: 1st Tuesdays, 7 pm, San Francisco Business Times Building, 325 Fifth St., San Francisco. Call: 641-GMUG.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

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HyperCard SIG/GMUG. Meetings: 7 pm, 78 A Mars St., San Francisco. Call: 641-GMUG.

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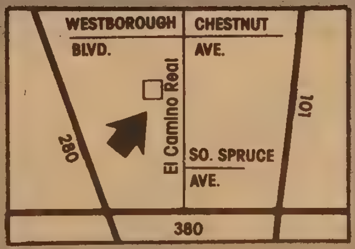

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Macintosh Users Of ComputerWare (MUCoW). Meetings: 2nd & 4th Wednesdays, 7:00 pm, Above ComputerWare store, 490 California Ave., Palo Alto. Call: (415) 496-1051 or 496-1033.

MacNexus — Sacramento's Macintosh Users Group. Meetings: 3rd Thurs. 6:30 PM Call (916) 446-2411 for info. 350 members, but still informal. Extensive public domain collection.

Macs Of Marin (MOM). Meetings: 2nd Thursdays, 7 pm, Redwood High School, 395 Doherty, Larkspur. Call: Steve Salzman, 459-5707.

Silicon Valley Computer Society's Macintosh SIG. First meeting: September 21, 7:30 pm, 6th floor offices of Arthur Young and Co., Mitsubishi/Plaza Bank Building, 55 Almaden Blvd., San Jose. A forum for shared ideas. First meeting will be a demonstration of HyperCard. Other demos are planned for future meetings. Call: Dennis Dawson, (408) 947-5550.

Stanford Macintosh Users' Group (SMUG). Stanford community membership: $25; public membership: $35 per year. Call: 723-SMUG. BBS: (415) 723-7685.

TI-West Meetings: 2nd Fri. 8 PM Chabot College, Rm. 600, 25555 Hesperian Blvd., Hayward, CA. Access to a variety of pub. domain software, education modules "problem solving" peripheral committee.

Tri-Valley Macintosh User's Group (TMUG). Meetings: 1st Thursdays, 7 pm, 4695 Chabot Dr., Rm 114, Hacienda Business Park, Pleasanton. Newsletter, large P/D library. Call: James (415) 426-8756 eves, Mike, (415) 838-6165.

MICROSOFT

Mac Diablo Users Group (MDUG). Meetings: 3rd Tuesday, 7:30 PM, Community Room, Glendale Federal Savings, 3101 E. Crow Canyon Rd., San Ramon. Small, helpful group.

Microsoft Word Users Group. Meetings: 4th Mondays, 7:30 PM - 9:30 PM, Hewlett Packard-Cupertino-Oak Room Bldg., 48 Pruneridge, 100 yds. east of Wolfe off Hwy 280. August 22: Chris Donner, Pres. Access Softek on DRAGNET for Text Retrieval and Management. Call: Bill West, 356-8805.

Mirosoft Word SIG of the SVCS. Meetings: 4th Mon. 7:30 PM Hewlett—Packard, Oak Room, Pruneridge at Wolfe, Cupertino. Contact Bill West (408) 356-8805 or Hunter Jackson (4080 446- 4097.

MINDSET

San Francisco Mindset Users Group. Call: (415) 626-4240.

MORROW

BAMDUA (Bay Area Micro Decision Users Assoc.). Meetings: 3rd Tues. 7:30 PM Albany Senior Center,846 Masonic Street (just north of Solano) in Albany, CA. Voice:(415) 534-4257. BBS:(415) 654-3882. P.O. Box 5152 Berkeley CA 94705.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

NEC

Bay Area NEC/100 Users Group. Meetings: 2nd and 4th Wednesdays. Locations vary. For those interested in laptops, especially Kyocera 80C85 type (NEC 8201a, Radio Shack Model 100 or 102. Call (415) 658-1889.

NOVELL

Novell Users Group. Meetings: Third Wednesdays, 6:30 pm, Coco's restaurant, 1305 South Mary, Sunnyvale. Newsletter, bulletin board, product demos, assistance for beginners. Call: Bill Strouse, (408) 453-3321 days; modem, 24 hrs: (408) 453-3326.

ORACLE

Northern California Oracle UG. Meetings: Call (408) 738- 8330 for info. Meets every 3 months at different Bay Area locations. Newsletter published between meetings.

OSBORNE

San Francisco Computer Society. Meetings: 1st Monday, 7:00 PM, Homestead S&L, 5757 Geary Blvd., San Francisco. CP\M and DOS machines. No BBS. Call Ralph Gallagher, (415) 929-0252 for information.

PARADOX

San Francisco Paradox Users Group. Meetings: 3rd Wednesday, call Jeffrey Edwards Co. for information, (415) 543-6227.

San Francisco Paradox Users Group, South Bay Chapter. Meetings: 3rd Tuesday, call Jeffrey Edwards Co. for information, (415) 543-6227.

PROGRAMMING LANGUAGES

C Programming SIG of the Silicon Valley Computer Society. Meetings: 3rd Mondays, 7:00 pm, Techmart, Santa Clara. Call: Fletcher Johnson, (408)946-0960/283-1333.

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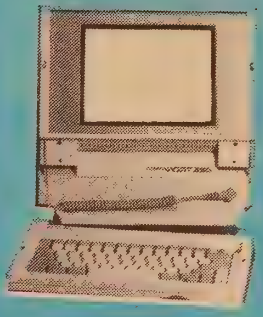

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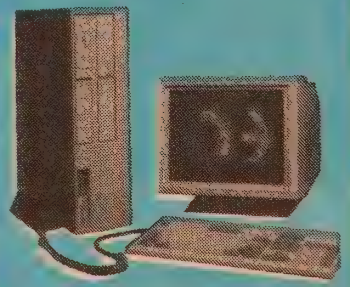

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TRS Nybblers. Meetings: 2nd Fri. 8 PM Chabot College, 25555 Hesperian Blvd., Hayward. MS-DOS, CP/M, laptops, Mod 1, 3, 4, Mod 2, 12, 16, 6000. Bud Gallagher (415) 522-5960 or Bruce Jarvis (415) 846-3575.

R:BASE

East Bay User Group. Meetings: Last Thursday of each month. For location and time, Call: Scott Longwell, 848-2080.

Northern California User Group. Meetings: Every 3 months. For schedule, Call: Ken Lebeiko, 881-2652.

R:BASE User Group Of The Redwoods. Meetings: Third Wednesdays, 3 pm, Sonoma/Marin County rotating meeting places. Call: Jim Ray, (707)886-5315.

San Jose User Group. Meetings: First Wednesdays. For location and time, Call: Hanna Varniz, 984-8484.

REVELATION

Bay Area Revelation UG. Meetings: 1st Tues. Call (415) 759-1210.

ROBOTICS

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SANYO

Sanyo PC Hackers. Meetings: 1st Wed. 7 PM Mercury Room, Mercury Savings & Loan, 99 El Camino Real, Menlo Park.

SOLOMON

San Francisco Solomon III Users Group. Meetings: last Wed.,odd months 6-9 PM Price Waterhouse, 555 California St. 36th Fl., San Francisco. Annual membership - $50; corp. membership - $75.

Solomon User Group of Silicon Valley. Meetings: For info contact Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark CA 94560.

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Sun User Group. Call: (415)336-4343.

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San Francisco 99ers. Meetings: 3rd Saturdays, 3751 Elston Ave. Call: Fred, (415) 530-8335.

Thousand Oaks Personal Computer Club (TOPCC). Meetings: monthly. Call: (714) 686-0336.

TIMEX/SINCLAIR

Timex Sinclair East Bay Z80 Users Group (TSEBZUG). Russ English, (415) 465-3116.

Timex Sinclair Peninsula Users Group (TSPUG). Contact George Mockridge, (408) 878-1773.

Timex/Sinclair Users of Silicon Valley (GUTS/SV). Meetings: each Sat. 9 AM Stanford Univ., Jordan Hall (quadrangle), Math Bldg. RM 380C. SW library & newsletter. For topic check PDSE BBS in Sunnyvale (408) 735-7390, 300/1200, 8-N-1, 24 hrs.

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Ventura Desktop Publishing Users Group. Meeting: 1st Tuesday, 7-9:00 pm, 1650 S. Amphlett Blvd., San Mateo. Newly formed group. Call Eleanor Church at (415) 726-3181, or Pam Sheble at (415) 574-2003 for information.

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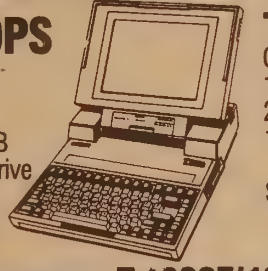

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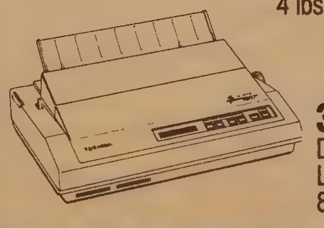

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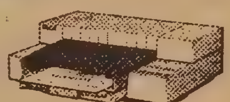

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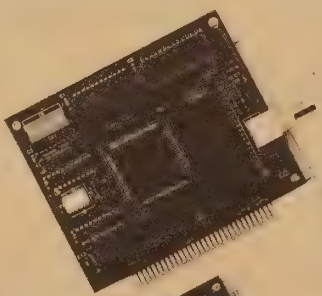

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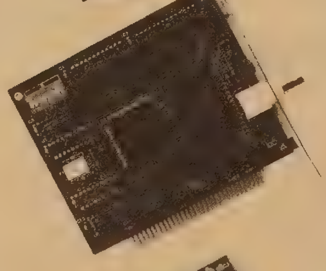
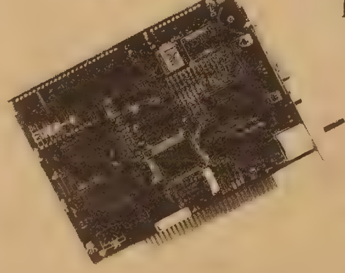
- SMC® Single-Chip VLSI Design
- Token Passing Scheme
- 4 Layers Board
- Comprehensive Installation Manual



Model: ARC-8B $95

- 8bit Bus Topology ARCnet® Card
- 100% Novell NetWare® Compatible
- 100% Compatible SMC®'s ARCnet
- 2.5 mbps Data Transfer Rate
- SMC® Single-Chip VLSI Design
- Token Passing Scheme
- 4 Layers Board
- Comprehensive Installation Manual



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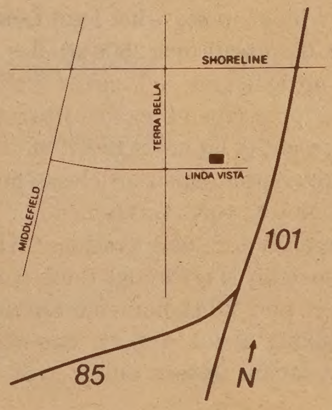

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DVORAK'S LAST COLUMN • BY JOHN C. DVORAK

Caution: Databases Can Be Harmful To Your Health (And Pocketbook!)

I wanted to check out the new Computer Library section on CompuServe. You can access it through PC Magnet, the reader feedback special interest group (SIG) for *PC Magazine* (type go pcmagnet at the "!" prompt). In the Computer Library section there is a full-text information retrieval system called the Computer Database. In it is almost everything found in *PC Magazine*, *PC Week*, *Computerworld*, all the IEEE publications, *Information Week*, you name it. Just about everything written in the field of computers is there, either abstracted or complete.

The great thing is that, if you don't mind spending $25 an hour, you can do wacky key word searches throughout the entire text of the hundreds of magazines. This is what I did yesterday.

I wanted to get my feet wet so I started by checking "by company name," instead of full text searches. I tried "MicroTimes" and "BAM Publishing" to no avail. Then decided to try IBM. There were 74 stories specifically about IBM. One group that caught my eye were 17 stories about IBM Japan. In particular one whose subject was technical innovations. So I wasted $1.50 downloading a *Computerworld*, Sept. 12, 1988, article titled, "Japan firm to sell AI tool know-how," written by Lori Valigra. The abstract said: "Sumitomo Metal Industries and IBM Japan have co-developed an expert system for controlling on-line computer networks under their Sparks project. The artificial intelligence-based (AI) method will increase the operation efficiency of networks by 60 percent." Etc., etc.

OK, now I knew you could be easily bored by this, but I typed in "Apple" to see what I got from the database. Wham, there were over 2500 articles. Two groups of them intrigued me so I looked them up. One was about Apple Japan and the other about Apple Mexico, an entity I'd never heard of.

There were five Apple Japan articles. The one from *MacWEEK*, Nov 8., 1988, was typical, "Yocam cleans Apple Japan house; new president will be Japanese." I yawned my way through these articles, including another Lori Whatshername *Computerworld* article talking about Apple's one-percent market share in Japan. Sneeze and it will blow away.

Anyway, I skipped to Apple Mexico and found a *Computer Reseller News* piece dated Aug. 3, 1987: "Apple considers exiting Mexico. (Apple Computer's Mexican operation falls short of revenue projections.)" Hmmmm, now this was getting interesting. According to a writer with the peculiar name of Nancy Trespasz, Apple has been losing $750,000 monthly and may shut down due to weird Mexican ownership requirements. So much for the graphical interface south of the border.

I figured this was boring so I went into full text search mode and looked up the word "dog." There were 26 articles with the word dog in them. Now *this* is interesting. It was stuff like the *PC Week* editorial entitled, "Is 1989 the year of the dog that didn't bark?" I figured I'd go for broke with these searches and input the word "Edsel" (don't ask me how this idea came to me). Wham, bam, to my amazement there were nine articles!

I had to see how anyone could slip the word Edsel into a story. One of the citations was from *PC Magazine*! Out of curiosity I paid the surcharge to find out how this happened and discovered a Jan. 26, 1988 Jon Matzkin review of *Addresselope*. His text said, "There is something unsatisfying about printing out a great-looking letter, then stuffing it into an envelope suffering from a sample of your poor penmanship. It's like hiding a Ferrari engine under an Edsel body." A simile!

Well, I then figured I would try to look up Kim Basinger. Why not? The database checked found nothing. I even tried Kim Bassinger. Nope. Boy, we talk about Edsels, but not Kim. Then I tried Marilyn Monroe. Four hits! Can you imagine? One reference was in a profile of Pyramid Technology done in *Electronic Business Magazine*. One was *PC Magazine* again. My curiosity got to me and I looked it up: *PC Magazine*, May 26, 1987. Not to my surprise it wasn't an article at all, but a Stephen Manes column. (Curiously, the database had Manes's name spelled "Stpehen.") His comments: "October 25, 1987: The estate of Marilyn Monroe sues rock star Madonna for wholesale appropriation of MM's original 'look and feel.' 'As the little copycat admits,' says the Monroe estate's spokeswoman, 'we are living in a material world.'"

Well, I then figured I would try to look up Kim Basinger. Why not? The database checked found nothing. I even tried Kim Bassinger. Nope. Boy, we talk about Edsels, but not Kim. Then I tried Marilyn Monroe. Four hits! Can you imagine?

I then got silly and tried Napoleon and Hitler and got nothing. Then eyeballing a nearby bottle of 1959 Chateau Lafite that was in a rack I decided to run the word "Bordeaux" and found five references. One of which was "*MacUser*, March, 1989, v5, n3, p295(4), *** Full-text article (4644 characters) *** Scrapbook. (column)"

So, believe it or not, I read the *MacUser* article to see how in the world they could possibly use the word Bordeaux, and was shocked to discover a reference to me. The reference to Bordeaux, however, had nothing to do with Bordeaux. I should read these magazines more closely! After all, I write for *MacUser*.

Listen to this, from a Kristi Coale column called the Scrapbook!

"Felix Dupont of Rockville, Md., recently set out on a quest of his own. He saw the Jasmine hard-disk drive ad on page 256 of our December '88 issue, and just had to have one. No, not the hard-disk drive, but the power briefcase that Guy Kawasaki uses to tote his Jasmine drive. For power users on the go, Felix tells us it's a Halliburton, and you won't find one at K-Mart. The 3-inch BORDEAUX model pictured lists for $415.

"Here's your chance to make a brief case about our very own anti-editor, John Dvorak. As the 17th century French poet/philosopher Renee Doubilard put it, 'It is easier to mimic that which we despise than to despise that which we mimic.' We don't know what he meant, either, but it gives us the chance to announce the first John 'I Can't Believe You Really Pay Him to Write That Stuff' Dvorak Write-Alike contest. If you feel he needs a piece of your mind, send us your Dvorakesque diatribe on the Mac-related topic of your choice. The best entries will be published in a future issue. Keep it short and, if this isn't a contradiction in terms, sweet."

Brief case? Oh brother. Hey Kristi! First of all, it's John C. Dvorak, not John Dvorak. Secondly, you're trying too hard to be cute. And, finally, I always wonder why they do these things without ever mentioning it to anyone. I cleared the screen.

Stunned by the ludicrous aspect to this discovery I decided to look up "Dvorak" on the database and see what I got. The machine came up with 266 citations. I rolled my eyes and turned off the machine. Well, at least I beat IBM, I thought to myself as I reached for the Lafite. ■

John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser*, considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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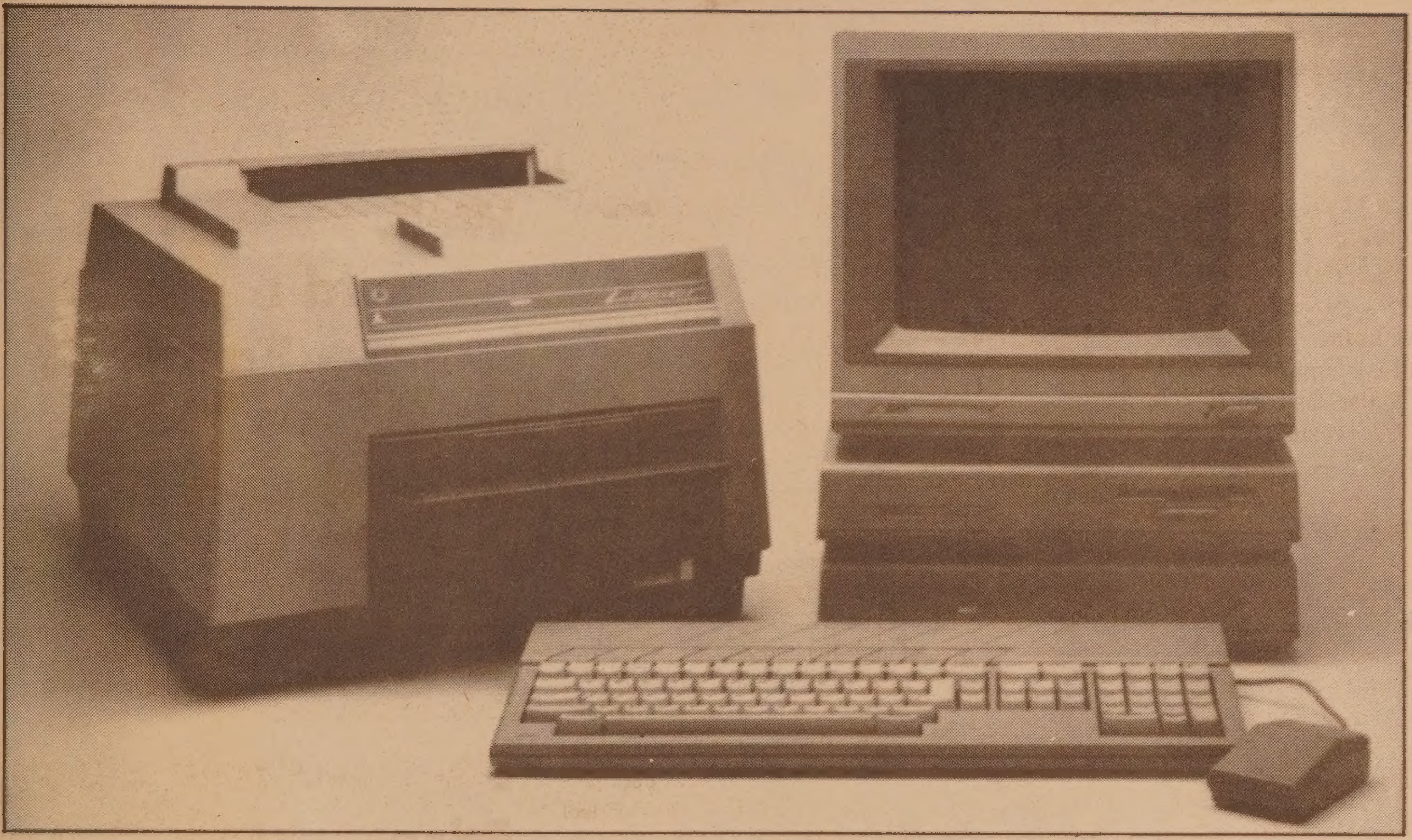

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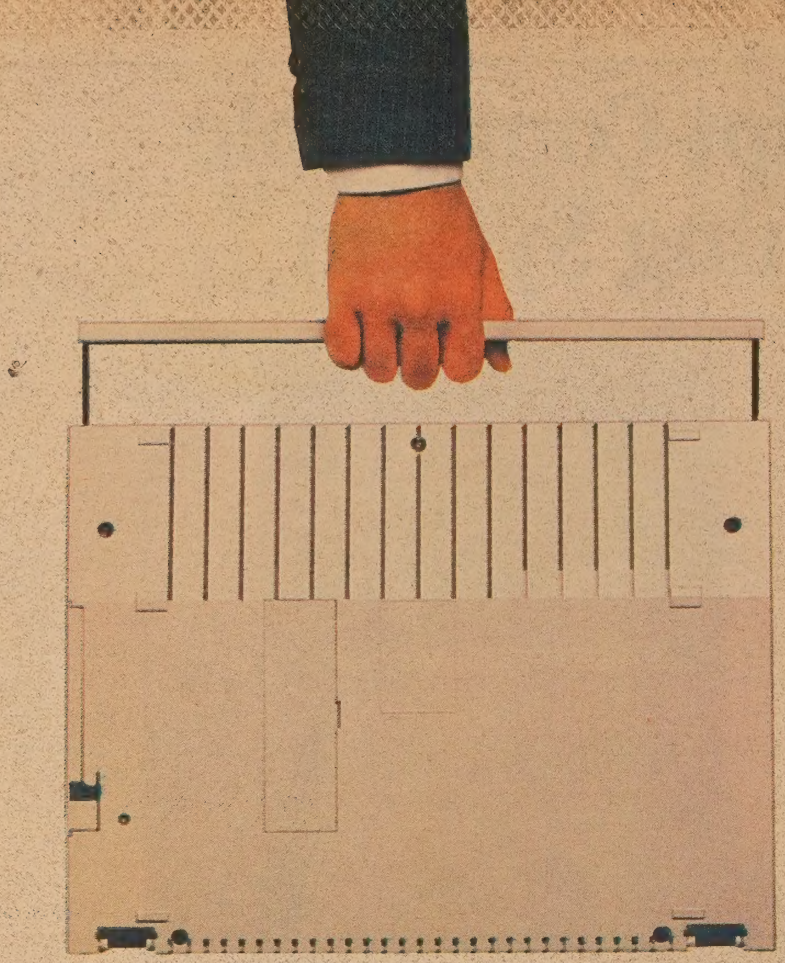

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